40TH ANNIVERSARY ISSUE

OCTOBER 1959

NavAer No. 00-75R-3

RANGER'S ROYAL FLUSH

Worthy of a salon exhibition of studio prints, this dramatic shot of four F4D Skyrays belonging to Fighter Squadron 141 taking off from the USS Ranger represents the highly effective teamwork of carrier and squadron. VF-141's pilots and insignia are displayed on inside back cover.

NAVAL AVIATION NEWS

OUR FORTIETH YEAR OF PUBLICATION, OCTOBER 1959

■ IN THIS ISSUE

■ THE STAFF

■ COVER

This month's "cover of covers" is the work of NANews Art Director, Jim Springer. Naval Air's carriers and aircraft, its missiles and men, and its blimps and helos which have been cover subjects in past years are brought together for the first time in this special 40th anniversary issue.

Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget, 10 Feb. 1959.

Published monthly by Chief of Naval Operations and Bureau of Aeronautics to disseminate safety, training, maintenance, and technical data. Address communications to Naval Aviation News, Op 05A5, Navy Department, Washington 25, D. C. Office is located in room 5E629 Pentagon: Telephone Oxford 73685 or 73515. Annual subscription rate is $2.50 check or money order ($1.00 additional for foreign mailing) made payable to Superintendent of Documents, Government Printing Office, Washington 25, D. C. Single copy, $.25.

NAVAL AVIATION NEWS

Tartar Now in Production

Scheduled for Fleet Use in 1960

Tartar, a Navy supersonic guided missile, is now in production. The surface-to-air missile will join the Fleet next year as the primary armament of guided missile destroyers now under construction. *Tartar* will also be used as the secondary armament of three guided missile cruisers under conversion.

Convair Division of General Dynamics Corporation is building the missile at the U.S. Naval Industrial Reserve Ordnance Plant, Pomona, California. *Tartar* was developed for the Bureau of Ordnance under the technical direction of the Applied Physics Laboratory of Johns Hopkins University, Silver Spring, Maryland.

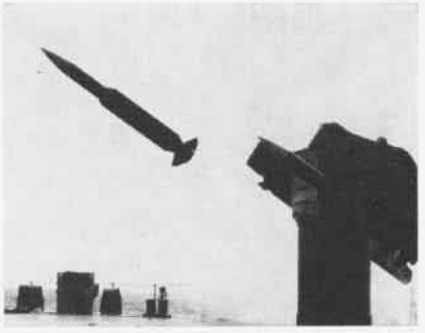
"The supersonic *Tartar*," BUORD Chief, RAdm. Paul D. Stroop says, "is highly effective against both low and high altitude targets."

Since space aboard ship is severely limited, the use of miniaturization techniques was required to package the highly sophisticated guidance, propulsion, and destruction systems into the small lightweight airframe of *Tartar*. The complete missile is about 15 feet long, and is slightly over one foot in diameter.

As part of the size reduction objective, a small stage, solid fueled, dual-thrust rocket motor was designed and developed by the Aerojet General Corporation, Azusa, California. Normally a two stage rocket propulsion system is used in this type of missile and its first stage drops off after it is expended.

"The dual-thrust rocket of *Tartar* achieves the same result with a single stage that is an integral part of the missile," Adm. Stroop explains. "A high-thrust, short-duration burning period serves to launch and accelerate the missile to a supersonic speed. After this a lower-thrust longer-duration burning period maintains this high speed until target interception.

"When the missile approaches within lethal range of the target, the warhead is detonated and the force of the explosion destroys the enemy aircraft."



TARTAR IS FIRED FROM USS NORTON SOUND

Flatley Awards Announced

First Winners: Ranger and Antietam

Hard-hitting attack carrier USS *Ranger* and support carrier USS *Antietam* are the first winners of the Admiral Flatley Memorial Awards for aircraft carrier accident prevention. Announcement was made by CNO.

One of the reasons for the *Ranger* award was her record of only six deck accidents out of 12,500 landings. Her record is particularly significant since this is her first full year of fleet operation. She has returned to her home port of Alameda after completion of her first tour of Western Pacific duty.

Antietam has alternated between antisubmarine operations in the Atlantic and carrier landing qualification work for fleet units and the Naval Air Training Command. She is currently operating in the Pensacola area.

RANGER AND ANTIETAM ARE FIRST WINNERS

The awards are named for the late Vice Admiral James H. Flatley, a Naval Aviator associated with carrier aviation during most of his career.

Each of these winning ships will hold the Flatley trophy for one year and receive a replica of the plaque to be retained in permanent custody.

Canopy Plastic Developed

Withstands Strong Heat, Pressure

Goodyear Aircraft has developed a plastic bubble strong enough to withstand the impact of a .45 bullet or the temperature of a 400-degree oven

Its purpose is to protect pilots of aircraft flying at three times the speed of sound.

The bubble is made of clear plastic laminate called Thermoshield. According to a company spokesman, its development represents a "major break-through" because for the first time a plastic aircraft canopy furnishing necessary heat resistance and high structural strength can be made with optical clarity required for pilots.

Success of the laminate depended on the development of a new interlayer that is both flexible and heat resistant, which retains its optical clarity throughout its service life, and which is curable at relatively low temperatures. It must stick to glass, polyester and acrylic materials.

Several plastics with suitable heat resistant properties were known, as were stretched acrylics, noted for their toughness and strength.

The puzzle consisted of finding a way of combining these materials into a laminate that would retain the qualities of both.

Solution to the problem was the development of a suitable interlayer material coded by Goodyear as "F-3."

PRESENTATION MADE BY TRENTON MAYOR

Citation for Public Service

Trenton, N. J.. Praises Capt. Kenna

The City of Trenton, N. J., issued a special proclamation to Capt. W. E. Kenna, Commanding Officer of the Navy Turbine Test Station, in which Mayor Arthur J. Holland cited the accomplishments of the station during Capt. Kenna's tenure.

Outstanding achievements listed were: Construction of $5\frac{1}{2}$-million altitude test cell, approval for construction of an accessory test wing at a cost of $1.8-million, elimination of a noise problem by relocation of bleed silencers, resolution of land acquisition problems at NATTS; testing of the J-79 turbine engine, the Allison J-71 and T-40, Pratt & Whitney J-75, and the Curtiss-Wright J-65; and determination of modifications required on all modern Navy aircraft engines to ensure proper service operation with a new fuel.

Also cited were completion of altitude qualifications of the most powerful production turbo jet engine in the country; and solving of service problems in the McDonnell F3H-2 and North American *Fury*.

Accepting the honor, Capt. Kenna stressed the point that "Only through the hard work, excellent morale and fine spirit of cooperation of all employees at NATTS could these achievements have been accomplished."

The mission of NAATS TRENTON is to test engines and components under simulated operating conditions.

New Bureau Established

Weapons Outfit Operational Soon

The Bureau of Naval Weapons was officially established 1 September after Congress and the President had approved the consolidation of the Bureau of Aeronautics and the Bureau of Ordnance.

According to SecNav William B. Franke, the actual merger of the two bureaus is well ahead of the scheduled target date of 1 July 1960. The new bureau may begin operations as early as 1 January 1960.

In commenting on the reorganization in the Navy Department, Secretary Franke stated that rapid advances in the technology of Naval weapons had blended the missions and functions of the two bureaus into one.

"The problems occasioned by technical advances in supersonic aircraft, guided missiles, electronics and similar fields and matters of cognizance concluded that the Bureaus of Ordnance and Aeronautics should be combined to form a new Bureau of Naval Weapons. The long-continued history of outstanding accomplishment of the Bureau of Ordnance, since its inception in 1842, and the equally dynamic accomplishments of the Bureau of Aeronautics in 38 years were recognized, but the consolidation of these two distinguished organizations is essential and will produce a significant improvement in the total weapon system effort in the Department of the Navy."

Organizational structure for the new bureau was evolved by a Planning Group headed by VAdm. E. W. Clexton, Chief of Naval Material, with RAdm. C. B. Martell, acting as his Deputy.

The new bureau will employ more than 4400 military and civilian personnel at the departmental level. Total numbers, including global field establishments, reach 210,000, most of which are civilian industrial employees.

ADM. ARLEIGH BURKE, *CNO, (left) qualified as Sidewinderman First Class by firing a 1A at China Lake. RAdm. K. S. Masterson, Director Guided Missiles Division, presented an inscribed plaque in honor of the occasion.*

RADM. IRVIN (L), CAPT. BEVERIDGE OF VX-5

A-Bomb Facility Inspected

RAdm. Irvin Flies as Bombardier

RAdm. William D. Irvin, Commander Operational Test and Evaluation Force, and members of his staff inspected VX-5 at China Lake. During his visit, the Admiral observed project flights.

Full scale training shapes and practice bombs were delivered on the C-3 Nuclear Weapons Delivery Training Range at NOTS CHINA LAKE from A4D-2, FJ-4B and A3D-2 airplanes.

During the time the flights were made, RAdm. Irvin inspected and saw in use the equipment installed in the C-3 Range Tower and other range instrumentation.

Technical data and information received from the C-range instrumentation is used by VX-5 in the development of new delivery tactics. It also assists in training carrier attack pilots who deploy to China Lake.

To get the "feel" of the program from a pilot's point of view, RAdm. Irvin delivered a T-63 training shape from an A3D aircraft.

A VX-5 pilot performed the delivery maneuver while the Admiral acted as Bombardier/Navigator and released the training shape on the range target.

Former Freedom Fighter

Whiting Man is Hungarian Refugee

A Hungarian refugee, Imre Klein, 20-year-old Airman Apprentice, recently reported to NAAS WHITING FIELD, Florida. A bus conductor in Papa, Hungary, when the 1956 Budapest revolt broke out, Klein hastened to join the Freedom Fighters.

With the suppression of the revolt, Klein fled to Salzburg, Austria. In December, 1956, he was flown to the Camp Kilmer, N. J., refugee center. Employed by a New Jersey firm, he was there until his Navy enlistment.

GRAMPAW PETTIBONE

Unlocked and Shot

On a night catapult shot, the canopy of an A4D-2 opened. The aircraft immediately settled as it went off the bow, but the pilot recovered, raising his gear. At 1000 feet and 180 knots, the pilot felt the canopy partially tear away from his starboard side and the A4D went into a violent skid! Using trim, rudder, and aileron, he managed to over-ride the skid.

As he slowed to 150 knots, the canopy tore off along the after edge of the plexiglass, striking the cover plate over the ejection handle and narrowly missing the pilot's head. The portion that carried away included the lanyard to the seat arming pin, thereby ARMING the ejection seat.

All this, and on the gauges at night too!

The pilot re-trimmed the A4D, climbed to 10,000 feet to slow-flight test the aircraft, and burned down to landing weight. After jettisoning both 150-gallon drop tanks, he dropped down into the pattern and made a normal mirror approach and a mighty smooth landing on the ship, armed seat and all.

Grampaw Pettibone says:

Well, fellers, this pilot closed the canopy and obviously did not swing the canopy control handle past the over-center position to "locked". The canopy latch pins will not engage the latches unless this is done.

This outfit had even painted a scribe mark on the exterior of the canopy which, when aligned with a fuselage mark, indicated a closed canopy to outside checkers. There's *no* way to check it locked from outside! For that chore we have to rely on the pilot.

Navy pilots will be glad to know BuAer is working like mad on this problem, and also the canopy shear pins problem on a priority basis. After he had his trouble, this lad proved himself a quick-thinkin' real cool tiger. He'll make out. Bet there ain't a more careful canopy locker no place.

Big Map

An FJ-4B landed at an overseas base after a GCA approach. As the pilot raised the nose for aerodynamic braking, the FJ swerved to the left so the pilot applied hard right rudder to bring it back to centerline. At 90 knots indicated, the nose was lowered but fell on through. The nose wheel was retracted!

Realizing that for some reason he had no nosewheel, although he had checked and double checked it prior to the landing, the pilot dropped his tailhook to engage the runway arresting gear. As he shut down the engine the pilot saw that his gear handle was in the UP position! He put it down and then secured all switches.

Investigation revealed that a *large chart* the pilot was carrying in the *left knee pocket* of his G suit had flipped the gear handle to UP at the time he had hit right rudder to correct the swerve on the runway. During the time the FJ was "riding high" on the left oleo the ground safety microswitch was momentarily de-energized and the nose gear retracted. As the FJ straightened out and rode solidly on the main landing gear, the switch was again activated and the gear retraction sequence stopped.

Grampaw Pettibone says:

Ding Bust It! The moral of this story is pretty obvious. Carryin' large charts or even the *new airways facility charts* in the knee pockets of G-suits or coveralls can be mighty dangerous and expensive. This could be a pilot induced booby trap in ANY airplane! Course he sure had the cards stacked against him. That gear never woulda folded if the ground safety switch hadn't been cut out by the swerve on the runway. It wasn't his day; he shoulda stayed in bed.

Scratch One Shutterbug

An F8U-1P *Photo Crusader* had completed six passes in the field mirror landing pattern, one of a flight of two aircraft on the mirror.

Due to the runway being fouled by another plane which had blown a tire on rollout, both *Crusader* pilots had been closely watching their fuel state with an eye to a possible diversion to another field.

The tower finally cleared them for a final landing and the lead pilot swung his photo bird into the downwind leg at 1500 feet, indicating 1400 pounds of fuel remaining. He reported at the 180° position, and also turning final. Suddenly it got quiet in the cockpit. He'd flamed out!

He rolled the wings level and set up a glide. The pilot remembered pushing the throttle forward, then to the cutoff position. He hit the ig-

niters and back to idle. Nothing happened and all the while he descended. He could hear someone yelling: "Get out! Get out!" on the radio but continued to try for an airstart. He pulled the emergency power pack and tried another relight, holding the igniters with his finger. No luck.

A glance at the instrument panel showed under 1100 feet and 150 knots. He sat up in the seat, reached up with both hands, and pulled the curtain. The chute seemed to open almost immediately, and fortunately so, for he was only about 200-400 feet above the desert floor as the canopy blossomed. His time of fall was short and there was nothing he could do to avoid hitting a tree; the only tree for miles around. The station rescue helicopter picked him up within minutes. His injuries? A broken ankle from hitting the tree. Competent witnesses stated he had ejected at 400 feet, give or take a couple of feet.

Grampaw Pettibone says:

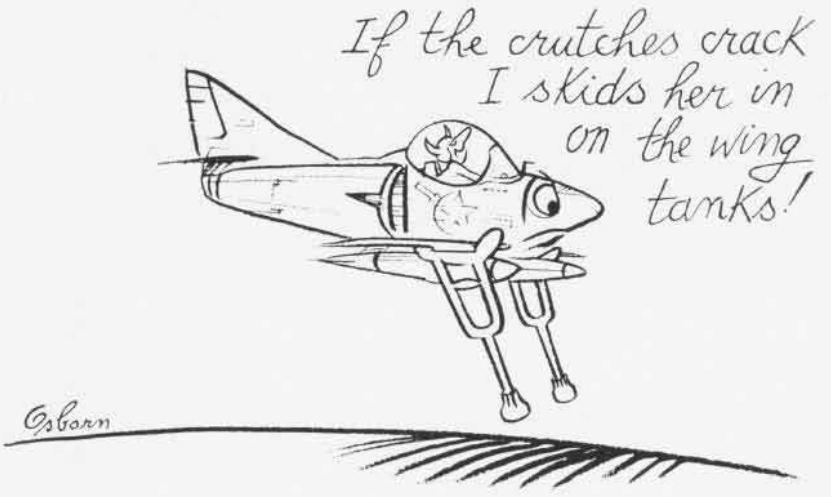
Great Balls of Fire! This lad (I use the term in relation to my own somewhat advanced status) nearly got kilt! He was the squadron X.O., a real fighter pilot type, and hated to lose an airplane, so he tried the relights. If he'd gotten one he'd never have gotten enough power in time to stop that sink rate. So he actually *was* lucky!

His F8U-1P had ASC 131 incorporated. This gave him an ejection seat system which has a low altitude—slow speed capability. Its flawless functioning was a sight to behold and saved his life. This new seat rig is a real jewel!

The reason he flamed out indicating 1400 pounds fuel state was—an F8U-1 fuel quantity indicator had been installed in this F8U-1P. The gauges are *not* interchangeable! In the rush to get the aircraft ready for deployment, it had *not* been defueled to "zero" on the gauge after installation, nor had it been calibrated before installation.

Furthermore, there was an error in the Illustrated Parts Breakdown which indicated the parts *were* interchangeable merely by absence of a usage code in the proper column. A whole series of errors and omissions made scrap out of a million-dollar bird.

Only trouble is, we can't get a million bucks for the heap of junk we've got left, so it's all loss.



Wheels, Wheels, Wheels

An A4D squadron had been deployed to an inland NAS to take part in an aerial demonstration.

After flying a practice session on the day before the scheduled show, the squadron did a routine break-up and commenced landings. One young pilot, who had flown the previous day as a fill-in with another outfit, decided to try their techniques and make the entire approach and landing with speed brakes extended. (His own extended brakes only after touchdown).

He broke with 45° of bank, pulled power back to 70 percent, put the flaps down at 165 knots, pumped the brakes, and called "at the 180, gear indicating down and locked."

His approach from the 180 was tight, in a constant bank, and neither the control tower men with binoculars or the runway wheel watch could see his gear until he rolled level on a very short final approach with gear UP.

The wheel watch man was momentarily confused, for this A4D was coming in close behind another A4D, also on final. He thought the pilot was taking it around again due to the close interval, but suddenly realizing this pilot *did* intend to land, ran to hit the switch to the flare gun cart. The flares went off just as the A4D settled onto the runway gear up! Very little damage was done, since the A4D was carrying two 150-gallon drop tanks. The aircraft slid out very nicely on them, coming to a stop about 1000 feet from the touchdown.

Grampaw Pettibone says:

Bust my Blood Vessels! This guy came out smellin' like a rose from a situation that in any other plane but the A4D would have meant an overhaul job! This baby lands on drop tanks like it was meant to come in that way.

What got my goat was the way everyone blamed the runway and tower wheel watches for not waving him off. It's the responsibility of the PILOT to get those wheels down!! Using the wheel watch for a *crutch* or *excuse* for a *Boo Boo* is not facing up to the fact that he just plain DOPED OFF!

Gramps' Advice to the Airborne

Every young aviator at one time or another grapples with a vital decision. Should he marry that girl he's found or stick with the so-called carefree life of a bachelor? Lookin' at statistics I can't help him a bit, but one advantage of being married is that you can't make a fool of yourself without finding out about it. This takes some of the load off Ol' Gramps.

CAN IT BE DONE?

ASK HMX-1!

PLOTTING atomic-age warfare in a planning room at the Marine Corps Schools command at Quantico, senior officers reach a perplexing crossroads. The concept under discussion bears promise of the same sound forethought that has kept the Marines in the position of pace-setters in assault tactics for many years, yet the concept hinges on whether or not helicopters can be employed in a new and different role. The chairman rules:

"Let's give the problem to HMX-1 and find out if it can be done."

A warrant officer in a west coast Marine helicopter squadron has designed a revolutionary hook that would permit pilots to pick up, fly, and deliver more loads faster and with a greater degree of safety than ever before. It is such a good thing his squadron commander would like to have it produced for all helicopter squadrons.

To learn whether the gadget will perform up to its expected standards under combat circumstances, it is sent to HMX-1 at Quantico for trials.

Other commands in the military services, and often representatives from industry, have ideas and or equipment that might make assault warfare more lethal. Thus other projects arrive at HMX-1 for trials. Problems undertaken by the versatile squadron are not always pointed toward warfare, however. Many deal with rescue, communications, and cargo transport that would permit progress in the opposite end of the war/peace spectrum.

Marine Helicopter Experimental Squadron One was commissioned December 3, 1947, as a product of more than two years of staff studies that began soon after the first atomic bomb was exploded. Planners realized that, regardless of their success in the island-hopping campaigns of World War II, the Marines could no longer afford to commit large masses of troops to one beachhead and thus expose them to annihilation from a single bomb blast.

New thinking pointed toward wide dispersal of troops and toward attack from several sides—perhaps even from *behind* the enemy's lines. Airlift of combat troops would be mandatory. The doctrine, of course, is no longer new. We know it today as Vertical Envelopment.

But when HMX-1 was commissioned, vertical envelopment was fu-

turistic in every sense—tactics, doctrine, training, equipment and logistics. HMX-1's mission has expanded as vertical envelopment has been proved and perfected but when the squadron was commissioned 12 years ago it was charged with:

"Developing techniques and tactics in connection with the movement of assault troops by helicopter in amphibious operations; and

"Evaluating a small helicopter as a replacement for the present OY type aircraft to be used for gunfire spotting, observation, and liaison missions in connection with amphibious operations."

Recognizing the fact that true vertical envelopment was as far away as the types and quantities of helicopters that would be needed, Marine leaders made it clear that helicopters would supplement, rather than supplant, conventional landings of troops by assault boats.

Even today, when helicopters and the vertical envelopment doctrine have come of age, there is still a valid need for landing troops and cargo by conventional methods when nuclear weapons are not likely to be used.

The 12-year history of HMX-1 runs a close parallel with the advances made in vertical envelopment. In many respects, the squadron's history is synonomous with the story of helicopter progress in the Marine Corps.

The first helicopter delivered to the squadron was Sikorsky HO3S. Several others were soon delivered, to be manned by Marine pilots who had been trained by Navy Air Development Squadron Three at NAS LAKEHURST.

Early vertical envelopment problems were "simulated" in most respects. The far-sighted Marines knew what they wanted to do with helicopters and they knew what features the ideal helicopter should possess, but their vision was far ahead of the state of the art in helicopter design.

In the spring of 1948, HMX-1 used five HO3S-1 helicopters, operating from USS *Palau*, in Operation *Packard Two* to test the value of the helicopters in the movement of assault troops from ships to a beachhead. In theory the five little machines, carrying two "troops" each, represented a full helicopter group of 184 large HRP type helicopters which were not yet delivered to the squadron. The mission was to lift a theoretical regimental combat team to the beach.

The five combined HO3S-1's had less lift capability than a single helicopter of later design but they proved a point. While landing barges formed up and headed slowly through the surf to the landing area, the helicopters took off with their troops, flew swiftly over the assault boats, landed their men behind "enemy" lines, and came back to the ships for subsequent loads.

In contrast to that meager beginning, Operation *Packard Ten* was held this May. Helicopters that had been considered beyond vision in 1948 took part in the operation. In addition to lifting troops, the big helicopters employed in *Packard Ten* were capable of delivering bulldozers, cranes, jeeps, bulk fuel, airport control towers, electronic workshops and supplies which had been pre-packaged as whole or component parts for helicopter lift. They could fly reconnaissance missions, lay wire for communications, evacuate wounded troops, and perform air-sea rescues.

The ultimate use of the helicopter in assault warfare has not been reached. The full story of where HMX-1 has come from, where it is now, and where it will go in the future cannot be told for obvious reasons. But to get the drift of progress that has been made by the squadron, and to appreciate what HMX-1 has contributed to the art of warfare, some sample projects have been pulled from the squadron's files at Quantico. Some projects were done for the Commandant of the Marine Corps, some for the Marine Corps Landing Force Development Center which includes both the Development Board and the Equipment Board, others for BUAER and the Office of Naval Research, others for the Marine Corps schools command, still others for Navy and Marine squadrons and some have originated within HMX-1 itself. Not all helicopter evaluation is done by HMX-1, however. As use of the helicopter has expanded, many tests have been made by other Marine helicopter squadrons.

• HMX-1 began trials in 1948 to learn helicopter field requirements, what formations would be best under combat conditions, and how to use the helicopter with fighter planes to insure the greatest chances for success as the helicopter delivers troops or cargo from ships to the enemy beach.

Dodging enemy fighters with a heli-

LIKE SWARMING BEES, THESE 15 HELICOPTERS FROM HMX-1 FLEW SIMULTANEOUSLY IN ORDER TO PERFECT NEW AMPHIBIOUS TACTIC

STUDENTS FROM MARINE CORPS SCHOOLS AT QUANTICO ARE FLOWN INTO SIMULATED COMBAT SITUATION BY HELICOPTERS OF HMX-1

copter, said a Korea veteran, is something like stepping aside to avoid being struck by a bolt of lightning. It's easier said than done. Quite early it was realized that to be effective, helicopters would have to have a fighter escort to their destination or the attacking force would have to destroy the enemy's aircraft on the ground.

Short of this, the helicopter's only hope for survival in an encounter with enemy fighters would be to descend rapidly and hug the land, depending on terrain features and good camouflage to make the helicopter harder to spot from above.

The ideal helicopter defense against both surface and aerial gunners was demonstrated Armed Forces Day in Washington. Carrier attack planes came in and pulverized the enemy's ground defenses, then troop-carrying helicopters came in under heavy jet fighter escort to land their troops.

• Beginning in its first year of operations, HMX-1 carried out several projects in laying communications wire by helicopters flying at fairly high speeds. The first project employed a single hand-held reel that carried a half-mile of wire. The arrangement was so crude that the man holding the reel wore heavy gloves to protect his hands from chafing as the wire paid out. The latest wire-laying method employs a large coil inside a canvas bag. Wire feeds out from the coil in much the same manner as a person would pull twine from a ball.

With the helicopter flying at 80 knots, a relatively small helicopter can lay eight miles of wire from 16 reels. An HR2S could probably lay 100 miles of wire on one run, according to an HMX-1 estimate.

• In August 1948 HMX-1 accepted delivery of its first Bell HTL and two Piasecki (now Vertol) HRP-1 *Flying Bananas*. With the arrival of the HRP-1's the squadron began to reach the point where the word "simulated" troop movements could be replaced by "actual" troop lifts.

But tests proved that the large troop-carrying helicopters could not land safely on boom-rigged transports and cargo ships; that if the large helicopters would be required to make such landings to pick up troops, the transports would have to have landing platforms installed. This led to flight-deck-rigged LSD's and later to aircraft carriers being converted to Amphibious Assault Ships (first CVHE and now LPH).

• Cold weather helicopter operations were conducted by HMX-1 in Newfoundland in 1948. Lessons learned in the use of heaters, engine pre-heaters and defrosters paid off handsomely during the war in Korea.

• HMX-1 helicopters flew observation, reconnaissance, personnel transport, wire laying, aerial photography, and evaluation flights for observing the results of Naval gunfire damage in Operation *Lantflex 1949*. Operating from USS *Palau* in Puerto Rican waters, the whirlybirds proved once more that their mission in assault warfare was valid.

• On May 9, 1949, HMX-1 staged the first in a series of demonstrations that have become an annual "kick-off" in demonstrating the capability of the Armed Services to conduct modern war. In conjunction with Marine air and ground forces, eight HRP's took off from a simulated carrier deck at Quantico with 56 fully equipped combat troops.

Distinguished viewers saw helicopters speed in under cover of fighter aircraft which strafed the area and laid smoke streams. The helicopters landed, discharged their troops in 25 seconds, and took off. Soon other helicopters brought in 75-mm pack howitzers on external hoists and landed them for use by the ground troops. The field pieces were firing within three minutes. Other helicopters laid wire, spotted for artillery firing, and evacuated casualties.

• Beginning in 1949, HMX-1 conducted several tests to determine whether or not the helicopter could be used successfully as an attack vehicle.

Experiments have been going on for some time at Quantico in rigging helicopters with machine guns, rockets, mortars, and even bombs. Many of the experiments were successful to a greater or a lesser degree, but most helicopter experts are convinced that the rotary-winged aircraft's greatest feature in amphibious operations is its load-carrying, rather than its offensive strength.

• Evacuation of combat casualties by helicopter was perfected in 1950. Experiments with a Bell HTL-4 at Quantico saved scores of lives as the war was fought in Korea. One officer, doing a repeat tour with HMX-1 after his first tour during the war in Korea,

FIELD PIECE IS DELIVERED BY HELO TO COMBAT MARINES ON QUANTICO 'BATTLEFIELD'

DOORS OPEN, FLIGHT OF FIVE HMX-1 HELICOPTERS RACES IN TO LAND ASSAULT TROOPS

INTO HEAT OF 'COMBAT' FLY WAVES OF HELOS TO ENVELOP THE 'ENEMY' VERTICALLY

said he feels that the success of the helicopter in performing evacuation service in Korea actually caused a delay in the development of helicopters for assault warfare. "The generals were so impressed by the way we could rescue wounded men that they wanted us to do nothing but rescue," he said.

• One of the least-known, but no less significant, projects carried out by HMX-1 was pilot training. In the fall of 1950, when it was determined that helicopters had come into their own, the Marines' need for trained pilots exceeded the training capability of VX-3. So several hundred pilots were trained for combat by HMX-1 at Quantico before helicopter pilot training began at Ellyson Field at Pensacola.

• With the war over in Korea, HMX-1 reverted to its role of trying out new methods and techniques of using the helicopter as an assault vehicle. As helicopters grew larger and as their load-carrying potential increased, tests were made to discover how more and more men and equipment could be delivered.

Internal and external loads were improved and in-flight refueling trials were begun so that helicopters using the "buddy" refueling system could carry more weight farther. The helicopters themselves were improved and flight was made safer by advances made in navigational equipment, communications, and other technical aspects of flight.

Proper approach lighting for helicopters was worked out to insure safe night landings. Camouflage was worked out to a fine science. Larger and larger items have been designed for heli-lift in combat and each item has been trial lifted before acceptance by the Marine Corps.

HMX-1 has continued to carry out its initial mission. Meantime, it has inherited several new ones. Perhaps foremost of all is the support HMX-1 gives the various Marine Corps schools. Being based at Quantico where practically all Marine officers are trained, the squadron is used extensively in training problems.

School administrators give student officers a tactical problem; for example, the capture of a specified hill. The students decide how many troops they will need, how they will be deployed, and how transported—by sur-

HMX-1 TESTS NEW PUBLIC ADDRESS SYSTEM

AIRLIFT OF JEEP IS PERFECTED BY HMX-1

MEN, GEAR ENTER CAVERNOUS HR2S JAWS

face vehicle or helicopter. In nearly every problem, helicopters will be required. They may be used to encircle the enemy, to "leap frog" troops from the rear to the front, to deliver supplies or construction equipment, to lay wire, or evacuate wounded.

As in the past, HMX-1 serves as a clearing house for technical products, inventions or ideas. Whether originated at the top or the bottom of the chain of command, or even outside the Marine Corps, HMX-1 is the command that will test out the idea or product and answer the all-important question: Will it work in combat?

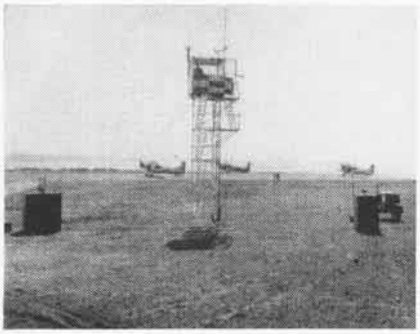
A typical problem just beginning at Quantico is the wringing-out of rotorcycles. Several years ago the Marine planners decided they wanted an airborne vehicle that would provide the same services as a small surface vehicle (motorcycle or jeep)—and one that would involve no more operator training than its surface counterpart. BUAER opened a competition and several manufacturers responded with products. The two which seemed most promising were Gyrodyne's XRON-1 and Hiller's XROE. Five of each were ordered for evaluation.

Two of the XRON-1's have been delivered to Patuxent for flight test. Three new ones will be delivered to Quantico for user tests. A similar program is scheduled in the case of the XROE's.

The one-man flying machine is a reality; whether or not it will satisfy the need for which it was designed will be determined by HMX-1, working under the Marine Corps Landing Force Development Center.

HMX-1 is responsible, under the Air

AIR CONTROL HUT IS AIRLIFTED TO TOWER



ASSEMBLED TOWER IS PLACED IN SERVICE

Rescue Center in Norfolk, for air-sea rescue in its assigned sector. At least one helicopter is kept in ready status around the clock for use in rescuing downed aviators and passengers on land or sea. Frequently the squadron is asked to search for lost fishermen and swimmers, and even escaped prisoners.

The mission which has probably given HMX-1 its greatest measure of prominence is its recently acquired role of providing helicopter service for the President of the United States. Army helicopters at Fort Belvoir and Marine helicopters at Quantico share this responsibility.

LtCol. V. D. Olson, the squadron commander, was asked what he believed to be HMX-1's greatest contribution to the Marine Corps in the squadron's 12 years of service.

"I don't think it would be fair to single out any one accomplishment above all others," he said. "Rather, I think it has been to prove the value of the helicopter in many phases of modern warfare."

There was once a time when the skeptics predicted the helicopter would never become an important war machine, he said. But since that time, practically all senior and many junior Marine officers have gone through one or more of the schools at Quantico and they have seen how versatile a machine the helicopter can be.

"Now they are convinced, almost to a man, that the question is not simply 'Can it be done by helicopter?' —but rather, 'Why don't we have more helicopters to do the job?' "

Judging by HMX-1's record, and the advances made in helicopter design, the helicopter has truly come of age.

PLUS TEN MAKES IT FORTY

FORTY YEARS ago on October 1, 1919, the first issue of the *Daily Aviation News Bulletin* on the finest onion skin closed with this news item:

"Recently the Naval Air Station at San Diego, Cal., loaned a number of Navy pigeons to the Army for use in connection with an extended search which was being made in lower California Mexico, for two lost Army aviators. All of the birds but two homed in excellent condition, bearing messages of importance."

Not being Navy pigeons, we have not had to "home in excellent condition," but it has been the aim and principle of successive editors to publish "messages of importance."

The first three decades of the News were ably summed up by LCdr. Arthur L. Schoeni in the leading feature of October 1949 issue of the *News*. He recounted the progress from daily typed notes in carbon copies to a glossy, conventionally printed monthly, from the magazine under the editorship of Mrs. Joy Hancock Ofstie who worked for Lt. Arthur W. Radford, to Schoeni's own editorship.

The first 30 years of aviation progress saw the emergence of the carrier in the seapower line, the great advance in aeronautical design, the conflict of World War II, and the rise of early Naval Aviators to top Navy commands. The words that all but close the 30-year resume were prophetic, "Who knows, tomorrow they may take basic training in jets." Today this vision is being realized.

The story of the years from 1949 to 1959 is largely the story of jet aircraft, great advances in all fields of aeronautical research, an arsenal of guided missiles, and the introduction of the words "outer space" into every day conversation. During this time the editorship of *Naval Aviation News* passed from LCdr. Schoeni to Cdr. William A. Kinsley, to Cdr. George F. Rodgers. At the same time the History and Publications Office of DCNO(Air) has been headed by Cdr. L. L. Booda, Cdr. Matthew Portz, Cdr. B. J. Slattery and Cdr. E. G. Colgan.

Hardly had the planes been mothballed and stored after WW II when it was necessary to unzipper the Fleet

and call out the Reserves as hostilities broke out in June 1950 in Korea. By the October issue of that year, we were describing the process of taking the reserve elements of the Fleet out of mothballs. In December 1950 we carried the first of what was to prove for several years a regular feature, "Naval Airpower in Korea."

One piece of news *Naval Aviation News* proudly related (January 1951, p. 9), was the one dealing with the first Navy kill in jet combat. LCdr. W. T. (Tom) Amen, VF-111 skipper, shot down a sweptwing Mig-15 on 9 November 1950. He had been the head of the branch publishing NANEWS before being assigned a fighter squadron.

With the coming of jets in force, the head (1950) of Flight Test at Naval Air Test Center, Cdr. Emerson Fawkes, early in the last decade ruefully remarked, "Our engineers should have doctors' degrees; pilots, master's degrees; and maintenance personnel, bachelor's degrees." Certainly much that had been done before in the field of training had to be brought up to date. Sense pamphlets had, in many cases, to be rewritten. "Keeping jets roaring" was a tremendous task.

"Messages of importance" included not only the reporting of the Korean conflict and Navy handling of potential trouble spots in the Near East, particularly in the last few years, but also the reporting of important research programs, such as *Deep Freeze* and the International Geophyscial Year, and of course, in the last two years especially, space. In fact, the Space Age seems to have opened as far as the *News* is concerned with a one-page item in February 1951 enthusiastically entitled, "All Aboard for Jupiter." It recounted the problems of space flight as projected by eminent scientists before the Flight Surgeon Classes at the School of Aviation Medicine at Pensacola.

Our first formal, full-dress article on space, "Man's Challenge to Outer Space," appeared in July 1957. The article has since appeared with full credit to *Naval Aviation News* in other technical publications. Since then we've begun to feel quite familiar with the subject, if not at ease.

Our greatest moment of journalistic happiness occurred on December 30, 1955. The January 1956 issue no sooner was released than a picture article was picked up by the Associated Press and reported on page one of the New York Times with credit to *Naval Aviation News*. "A Glimpse of Soviet Aviation" was just what the papers wanted coast to coast.

But whether we were reporting on space problems, aircraft materials, new syllabi in training, foreign aircraft, the missions of the Sixth Fleet in the Mediterranean and the Seventh Fleet in the West Pacific, the aim of the *News* was to keep its readers abreast of Naval Aviation.

In our pages we have heralded the arrival of new carriers in the Fleet, USS *Forrestal*, USS *Saratoga*, USS *Ranger* and USS *Independence*. We look forward to *Kittyhawk*. We've faithfully chronicled the status of new aircraft and the exploits of the Naval Aviators who fly them. In these pages we can see the increasing importance of helicopters as they have been used for many tasks, not only in search, rescue and liaison, but also in anti-submarine warfare, a mission which bulks large in this decade and in this very issue occupies a feature spot.

We continue to believe on this, our 40th anniversary, in the value of maturity and the mission of delivering "messages of importance." **—I.W.R.**

The Many Moods of Gramps

EARLY GRAMPS *made debut on bended knee. Two experienced SBD ferry pilots had filed VFR, proceeded IFR illegally and crashed.*

SAGE OF SAFETY *took to the bottle(s) as a result of early wartime accident rate. Training mishaps were particularly upsetting to him.*

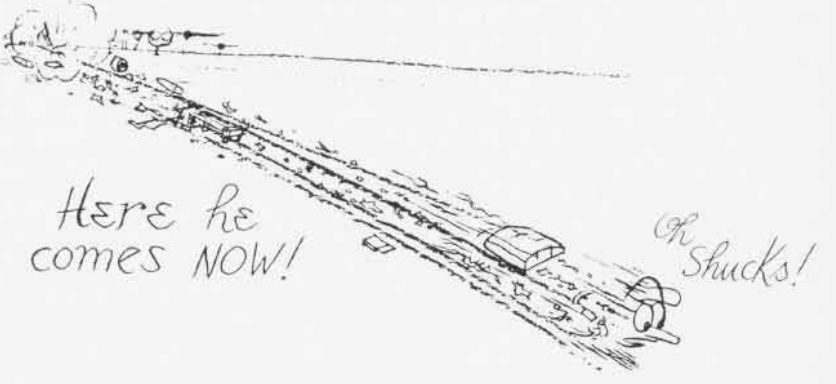
NEW METHOD *of busting up an airplane caused G.P. to shed bitter tears. Incident involved an intentional mid-air collision in 1949.*

CLOUDS, *confusion and a crashed SNJ invoked this reaction from Gramps. Pilot violated VFR clearance, became lost and bailed out.*

DRIPPING *with indignation, Grampaw lost his temper over many spin and taxi accidents in 1948. Rare "orchid" was given to GCA unit.*

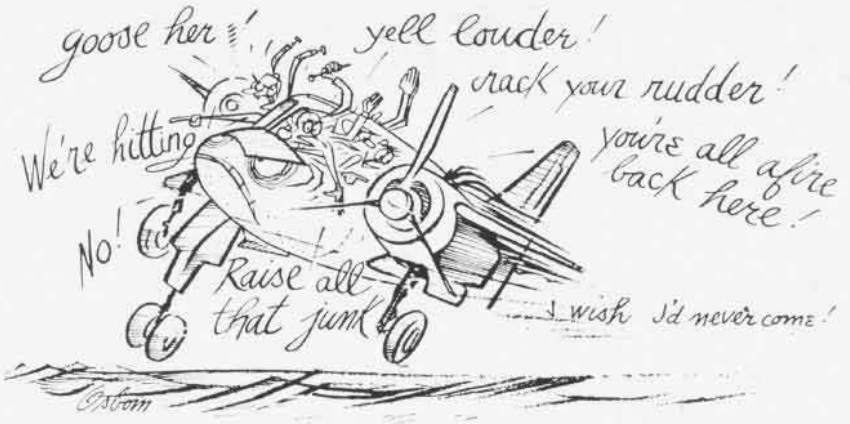
ULTIMATE *in unbridled umbrage is reflected in this portrait. Pilot forgot pitot cover. Landing to remove same, he forgot to lower wheels.*

UNUSUAL *engraving of peaceful Pettibone was made in 1951. Carrier squadron had logged 7545 hours, 1393 landings without accident.*



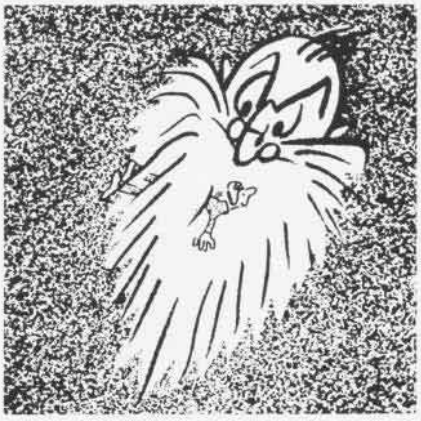
COCKPIT *confusion, poor procedures, carelessness or ignorance draw Mr. Pettibone's undisguised attention, verbal probes. One incident involved a befuddled aviator who landed downwind on the wrong runway at Squantum. Pilot was Gramps and Pettibone was promptly burned for it.*

INTRODUCTION *of flying platform in 1955 found Gramps first in line for x-out. Vehicle facilitated his penchant for airborne address.*

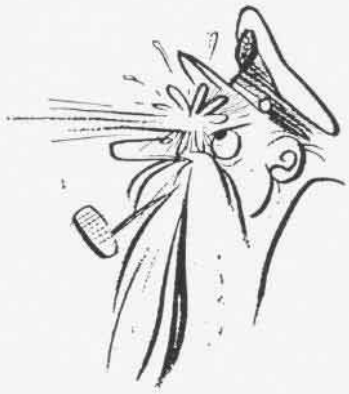


BARBED ART *aids which are part and parcel of Pettibone presentations underscore the unusual causes and usual effects of "head up and locked" pilot performance. Faulty maintenance rates its share of attention also. Occasionally a Kudo is rendered for poise and professionalism.*

OLD CURMUDGEON *went to pieces when seasoned jet pilot made several faulty assumptions, failed to use right switches. Pilot ejected.*



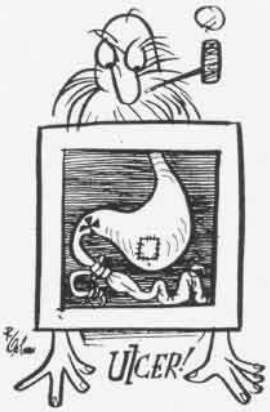
HAIRLESS *oracle discovered the Dilberts in his life could turn up in other places. One of them made take-off attempt with wings folded.*



SEAGULL *finally met up with the ancient aviator while he was on jet flight in 1953. He opined air below 1000 feet was for the birds.*

THROBBING *temples of Pettibone were treated after 1945 fiasco. SB2C pilot thought taxiing leader was on take-off run, ran over him.*

PIPE POPPER *occurred in 1949 when pilot reported he drove SNJ at full power on XC. Lost, low on fuel, he smashed craft in boondocks.*



CAKE-TAKER *in 1954 sent pressured Pettibone to sickbay. AD pilot exceeded stress limits while stunting, lost wing. Pilot perished.*

The many moods of Grampaw Pettibone are reprinted in this birthday issue as a tribute to the famed Sage of Safety. In his push for pilot preservation G.P. fumes, frets and frolics. Conceived by Capt. Seth H. Warner, Mr. Pettibone first appeared in the Bureau of Aeronautics News Letter. Throughout his 17 years, Gramps has been drawn by the noted artist, Robert Osborn.

INDUSTRY TACKLES ASW PROBLEM

IN TWO PREVIOUS issues we described the work being done by Task Groups Alfa, Bravo and Charlie to combat the Soviet submarine threat. Last February Admiral Thach spelled out ten specific needs for antisubmarine defense:

1. Burglar alarms—Warning systems that will indicate the presence and locations of submarines in deep ocean areas, in the moving areas around convoys or task forces, and in special areas not covered by the other systems.

2. Identification systems that will ensure that when our warning system flashes, it has been triggered by an enemy submarine, that there is in fact a burglar and not a stray cat (fish).

3. A prediction system, similar to existing weather prediction systems, for forecasting sound propagation conditions at and below the surface over wide areas.

4. Central stations and prowl squads, mobile ASW forces, to ensure apprehension of submarines located by the warning systems.

5. Certain detection of any submarine which exposes any part of itself above the surface.

6. Provision each ASW vehicle for the capability of finding, recognizing, and destroying submarines.

7. Discovery and utilization of phenomena, other than sound, for location of submerged submarines.

8. Weapons with range and accuracy equal to the detection ability of our equipments, so that a submarine found can be a submarine destroyed.

9. Forces sufficient to accomplish the mission. An increase in the capability of our vehicles and equipment will result in proportional decrease in forces required.

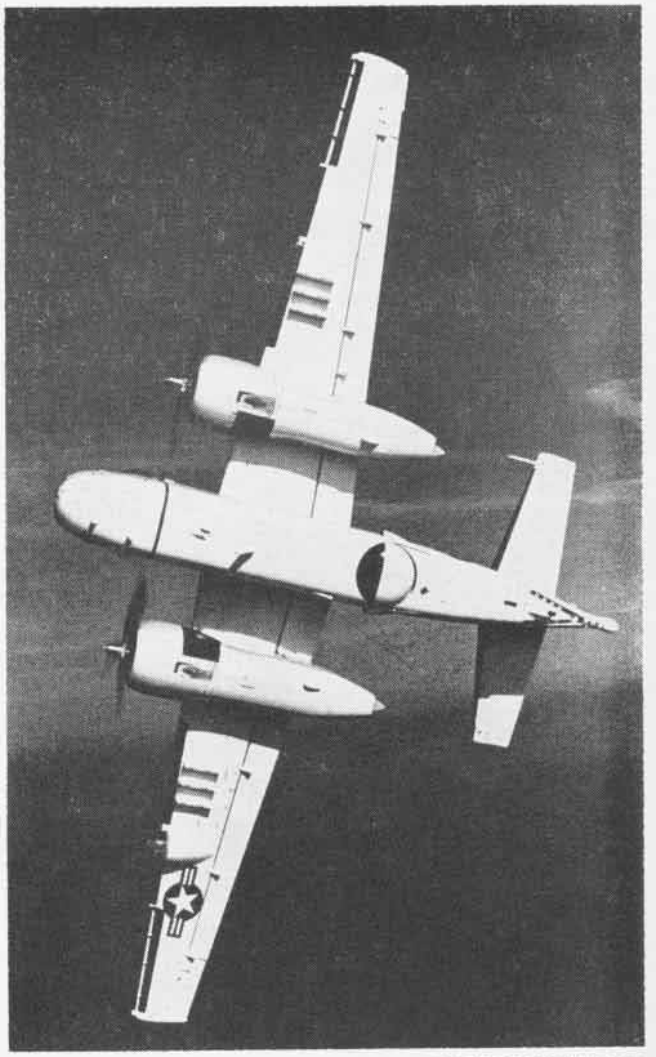
10. Programs to meet these requirements should be established along two parallel lines: an interim program to improve present equipments to counter the immediate threat, and a long range program of research and development to counter the future threat.

For this, the concluding chapter, we went to a cross-section of large and small American industries with the question: "What are *you* doing to help the Navy advance the art of waging war against submarines?" Within the limitations imposed by national security, their answers follow.

GENERAL DYNAMICS CORPORATION, a business employing 92,000 people, created a company-wide task force in 1957 to deal with the growing problems of ASW. Subsidiaries actively engaged in air, underseas and surface aspects of the program include CONVAIR, ELECTRIC BOAT and STROMBERG-CARLSON in America and CANADAIR LIMITED in Canada.

STROMBERG-CARLSON, long devoted to research, development and production in the fields of electronics and electro-acoustics, is taking an aggressive part in the program.

The largest and best equipped indoor sonar test facility in the free world was dedicated at Stromberg-Carlson's Rochester plant last February. Its size was required to be large because since World War II, the frequencies used in sonar have become lower and lower, and size is necessary if these longer wavelengths are to be accommodated. Although the main usefulness of the sonar tank will be in acoustical research and production testing of acoustical equipment, the tank also will be used in non-acoustical research.



HERE'S HOW A GRUMMAN S2F-1 TRACKER APPEARS TO SUBMARINER

The electro-acoustic engineering department of the Special Products facility at Stromberg-Carlson has already developed and produced in pilot quantities high-powered, low-frequency, moving-coil underwater transducers for use in a new, still classified sonar system.

Company-sponsored developments have been carried out on an underwater-spark source of sound which promises to be very useful where a lightweight, repeatable and controllable wide-band source is required. Work also is being

SIKORSKY HSS-1 ASW HELICOPTER HOVERS OVER SURFACED SUBMARINE. PILOT, R, DEMONSTRATES 'HANDS OFF' CONTROLS OF ASE

carried out in development of the hydrodynamic oscillator for systems requiring a non-electronic high-powered sound source.

Another major contribution Stromberg-Carlson hopes to make to ASW is improved communications since successful sub hunting will require all units in the hunting force to work as one weapons system. Stromberg-Carlson's latest project is the designing and building of an airborne radio receiver which will be an important unit in new sonobuoy systems.

Other contracts now held by Stromberg-Carlson include shipborne mine-hunting sonar, research in non-acoustic detection, underwater target classification, and the ASW mission of nuclear-powered seaplanes.

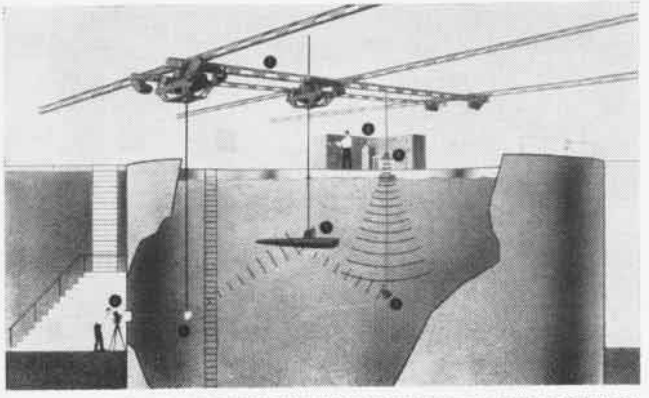
The active participation and contributions of CANADAIR LIMITED in the General Dynamics ASW program have been restricted, so far as the U.S. Navy is concerned. However, Canadair was selected by the Canadian Air Force to develop its latest ASW aircraft now in production. This airplane, the *Argus*, is capable of long range and extended time on station. It is equipped with the latest and best of airborne antisubmarine warfare devices originated by the United States, Canada, and the United Kingdom in the fields of detection, localization and attack against subs.

CONVAIR's main purpose in the General Dynamics ASW Task Force is to incorporate the input and basic data supplied by all divisions of General Dynamics.

Under Navy study contract, Convair is giving careful consideration to ASW as a possible mission for nuclear-powered aircraft. The tremendous payloads, almost unlimited range and endurance offered by nuclear propulsion may prove most attractive when combined with future advanced ASW equipments, General Dynamics maintains.

Many possible applications of the Lobber logistic missile system to ASW are under study by Convair. Equipped with either a nuclear or non-nuclear warhead, the missile appears attractive for depth charge applications, offering many times the range of current hedgehogs, plus high accuracy and low cost. Other applications to Navy missions, including the placement of sonobuoys and flares, are under study.

Convair holds a unique position in the field of hydrodynamics. It has not only a hydrodynamics laboratory, but also the only industry-owned high speed towing basin in this country. Controlled tests have been conducted in the basin at speeds above 100 feet per second and at acceleration rates up to five G's. The laboratory offers excellent features for research and development of surface and subsurface ASW components, says one company spokesman.



STROMBERG-CARLSON TANK CUTAWAY SHOWS DETECTION RESEARCH

AEROJET USES THIS RING CHANNEL UNDERWATER TEST FACILITY

NEW SIKORSKY HSS-2 HAS TURBINE ENGINES, FLYING BOAT HULL

For example, there is at present a company-sponsored investigation of cavitation and stability of a rapidly accelerating underwater missile. Fundamental hydrodynamic design data are being obtained for a family of underwater weapons. Research is being conducted on hydroskis and hydrofoils to develop more advanced undercarriages for aircraft and surface ships operated on ASW missions.

The laboratory is also engaged in experiments involving submarine wake studies, as well as the experimental development of towed sonar in collaboration with Stromberg-Carlson.

Within Convair's electronic laboratories are a number of special groups, including an infra-red laboratory.

ELECTRIC BOAT has helped to design and build the silent, deep running, nuclear subs. While still trying to make American nuclear submarines more difficult to detect, EB's scientists are now trying to find ways of detecting similar submarines which the Soviets might build.

CHANCE VOUGHT AIRCRAFT, closely associated with the Navy for more than four decades, is steering into the company's ASW effort some of the same talents that developed the *Corsair* and *Crusader* fighters and the *Regulus* missiles.

Like Electric Boat which has designed and built submarines, Chance Vought has become closely acquainted with submarines through the company's experience with the *Regulus* I and II. Many Chance Vought engineers have gone to sea in submarines and many CV people have long familiarity with the training of Navy missile crews. This background, coupled with a thorough analytical program in submarine countermeasures, has given Vought strong insight into many of the problems of antisubmarine warfare.

The ASW organization at Chance Vought consists of seven groups, each devoted to research and development in a specific ASW area, and a number of project teams, each charged with the development of an assigned project.

The individual ASW research and development groups are detection, operational and technical analysis, advanced aircraft, advanced missiles, advanced ASW electronics, nuclear propulsion, and ASW requirements. In addition to its own force of scientists and engineers, Chance Vought employs Texas Research Associates for special research.

Chance Vought is engaged in the design of a new carrier-based ASW aircraft which would provide a significant increase in performance over present ASW aircraft weapon systems. Rather than hope for a technical breakthrough which would illuminate the dark waters of the ocean as radar penetrates the air, Chance Vought's ASW system would be accomplished by wringing the ultimate effectiveness out of every existing or contemplated detection device, then integrating those devices in a fast airplane to produce a carrier ASW plane designed from the start as a weapon system.

Chance Vought believes it is possible to effect significant improvement in magnetic anomaly detection equipment and in sonobuoys. The system envisioned at CV also includes aircraft navigational equipment and data displays to enable the pilot and ASW personnel in the plane to know at all times the relative positions of the aircraft and the indicated position of the submarine.

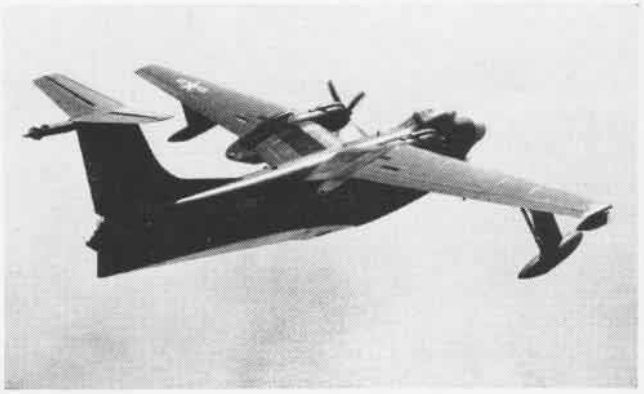
THE MARTIN COMPANY has organized a 2000-man engineering force into two separate task forces along the distinct lines of manned vehicle effort and missile-electronics effort. ASW research and development has full project status under the latter category.

Approximately 125 engineers are engaged in advanced design ASW efforts at Martin. The company has undertaken, with the Naval Research Laboratory, a program in deep water sound research. Other Martin ASW programs include:

New ways in which an ASW aircraft could apply electronic devices to scan water surfaces; development of radio-isotope power sources to operate ASW devices; development of nonacoustic methods of underwater detection; application of hydrodynamic experience to development of towed sonar designs; design studies and experimental work on ASW missile weapons systems; and design and testing of advanced airborne sonar equipment.

The company also is working on new means to increase the speed and range of the Navy's current ASW seaplane, the P5M-2 *Marlin*. Deliveries of these planes have begun.

Both the modernized older seaplanes and the production P5M-2's coming off the line are being equipped with a far-reaching and sensitive submarine detection system which will permit detection of underwater craft over great



MARTIN P5M-2 MARLIN CARRIES ADVANCED DETECTION EQUIPMENT

ranges. The system provides for integration of output information from all the various ASW detection devices within the aircraft at one control center. Thus one monitor can coordinate many actions against hostile undersea craft.

LOCKHEED AIRCRAFT CORPORATION'S ASW effort had its origin with the land-based PV-1 airplane. Then came the P2V *Neptune* series, and the new P3V. Company effort now encompasses the research and development of all facets of antisubmarine warfare.

Lockheed's concept summary is that the best defense against the enemy submarine can be realized by employment of all air, surface and subsurface modes, each at its best advantage, in a coordinated and efficient ASW force.

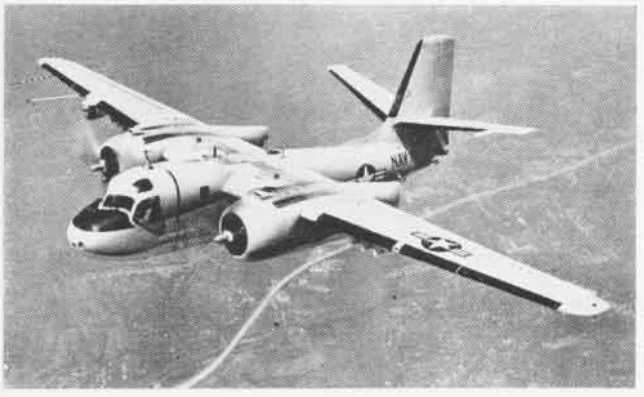
Lockheed's capability to expand into each of these areas has been realized during the past decade with the establishment of new facilities, including a new electronics and avionics division.

The prime responsibility for ASW at Lockheed has been vested in LAWSO—Lockheed AntiSubmarine Warfare Systems Organization. Through that body, the vast talents of the Lockheed divisions are brought together.

LAWSO has established the philosophy that ASW research must be conducted on a planned basis and the fruits of research must be reasonable and effective programs to improve the nation's ASW capability. Lockheed feels it is unreasonable for the Navy to be burdened by a multitude of disconnected and unsubstantiated ideas from industries that are directed toward possible ASW enhancement. "Only too often," a spokesman said, "is it possible to effect a small factor of improvement in an ASW technique or system—with a magnitudinous increase in cost or effort. A commensurate return must be realized for each man-hour and dollar invested."

LAWSO has submitted a development program to Navy offices for improving the sonar range and search rate of airborne systems with a potential for application to surface units. This is to be followed by other proposals soon to be released that could have considerable ASW significance.

In 1957 and 1958 Lockheed spent approximately 300,000 man hours in ASW research. Studies included development of ASW tactics, ASW weapons, operation and capability of sound detection devices, development of ASW airplane configurations, development of ASW crew equipment, studies of development of sonar missile devices, and research into carrier-based ASW aircraft systems.



GRUMMAN S2F-1 TRACKER IS LARGER, CARRIES NEW SEARCH GEAR

GRUMMAN WF-2 TRACER PROVIDES ELECTRONIC EYE/EAR SERVICE

GRUMMAN AIRCRAFT ENGINEERING CORPORATION is best known to ASW personnel for its carrier-based, submarine-hunting airplanes—the converted TBF torpedo bomber, the current S2F-1, -2 *Trackers*, and the new, improved S2F-3 which has been flown successfully.

Grumman also has succeeded in improving Magnetic Anomaly Detection (MAD) equipment installed in carrier-based *Trackers* (see NANEWS, March 1959).

Currently, Grumman research engineers are experimenting with new ways of detecting submerged submarines from the air.

KAMAN AIRCRAFT CORPORATION reports: "Perhaps the most interesting work we have done is the development of the remotely controlled helicopter and its application to the Destroyer AntiSubmarine Helicopter (DASH) concept."

In 1952 Kaman started work on a radio controlled helicopter. By 1957 it was developed to the point where company pilots could make the world's first hands-off helicopter flight. Development has continued and now non-pilots regularly make helicopter flights at the control station. A score of Navy personnel, who had never flown a helicopter, have been trained to fly the remotely controlled HTK.

The significance of the remotely controlled, torpedo-armed helicopter is briefly this: By eliminating the pilot and parts of a helicopter that are included for his safety and habitability, it is possible to add 500 or more pounds to the ship's payload capacity. Further, it is possible to send the remotely controlled helicopter on missions not feasible for manned machines—an example, to investigate the degree of radioactivity in an exposed area.

In training exercises with the Atlantic Fleet, it has been demonstrated that, operating in the combat information center of a destroyer, it is possible to fly the remotely controlled helicopter toward the vicinity of a detected submarine by following it on radar. This technique has been demonstrated in actual fleet operations at Newport and Key West. In the same trials, the helicopter operated at a distance beyond the range of existing detection devices.

In addition to the HTK/DASH project, Kaman is study-

ing its HU2K-1 with the thought in mind that it might be a potential antisubmarine helicopter. At BUAER's request, Kaman has made a proposal for the ASK which would be the ASW version of the HU2K-1.

SIKORSKY AIRCRAFT, the helicopter division of United Aircraft Corporation, is a prime supplier of Navy ASW helicopters.

The HSS-1, operational for several years, is being replaced by the improved HSS-1N, the helicopter which proved it was feasible to equip a rotary-winged aircraft for instrument flight.

A major step toward instrument flight for Sikorsky helicopters was the development of automatic stabilization equipment (ASE). ASE is an electronic system which unburdens the pilot of the need to make constant adjustments in the control of the helicopter. It is similar to the auto pilot of fixed wing aircraft except that it operates during all flight conditions to improve the helicopter's handling qualities. ASE allows the pilot to monitor the helicopter's performance in a comparatively relaxed manner.

A number of additions and improvements in the basic HSS led to the HSS-1N. These changes are seen chiefly in the incorporation of new radars to measure ground speed and altitude accurately, improved flight instrument and cockpit arrangement, addition of automatic engine revolution controls, and introduction of an automatic "hover coupler."

With the coupler, which uses radar to determine ground motion, it is possible for the pilot to place the helicopter on automatic control at 200 feet altitude and 80 knots airspeed and automatically come to a zero ground speed hover at a 50-foot altitude over a pre-selected spot.

Even as production models of the HSS-1N are arriving in the fleet, initial production has begun on a still newer Sikorsky ASW helicopter—the HSS-2.

Powered by twin turbine engines, the HSS-2 is the world's largest amphibious helicopter. It has a boat hull and is in the class of medium transport helicopters.

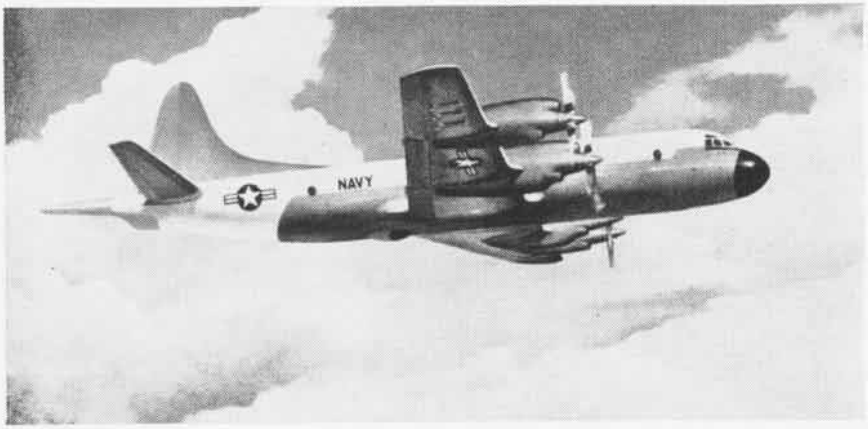
The HSS-2 has the dual capability of being able to search for and kill enemy submarines. Present fleet helicopters can perform only one of these functions during a single mission and still achieve maximum designed range.

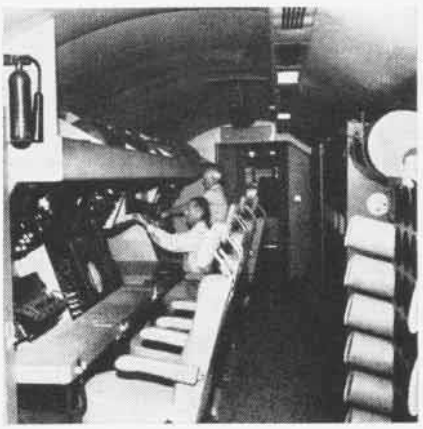
The boat hull enables the HSS-2 to meet Navy requirements for both land and shipboard operations. Because ASW missions require long periods of overwater flight, the HSS-2 was designed to alight on and take off from water.

The HSS-2 features improved submarine detection equipment and an improved navigation system. The inclusion of anti-icing equipment gives it increased capability for 24-hour, all-weather operations.

AEROJET-GENERAL CORPORATION, usually associated with JATO for aircraft and propellants for missiles, has established an Antisubmarine Warfare Division to speed the development and production of a new type ASW torpedo and to expand the company's basic research in ASW detection, underwater communications, weapon systems, ocean surveillance and related activities.

Prime contractor for the new high speed, long range undersea missile of radical concept, Aerojet is associated in this program with BENDIX-PACIFIC, the latter responsible for furnishing guidance and controls for the torpedo.



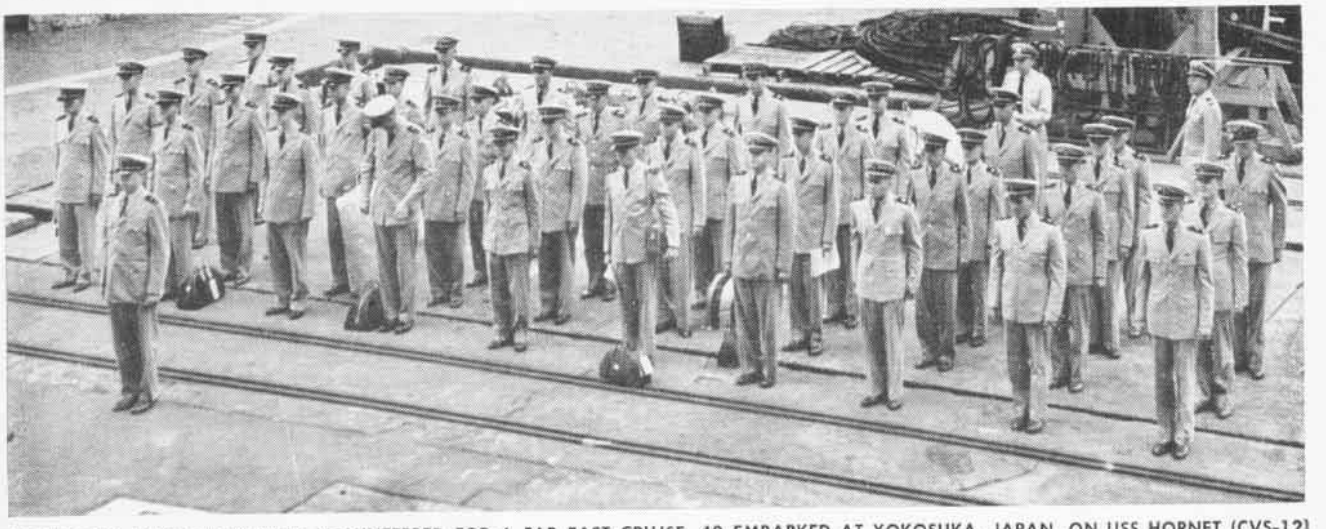


LOCKHEED TURBOPROP P3V ASW PLANE WILL COMBINE LONG RANGE, ENDURANCE WITH SEARCH, IDENTIFICATION, KILL EQUIPMENT

RAYTHEON is building industry's first integrated ASW/Sonar center at Portsmouth, R.I., near the destroyer base at Newport. The center is designed to help speed the development and production time for new special equipment required for underseas warfare. It will be built in two increments on a 100-acre site. The first section will be a 160,000 square foot structure housing the engineering development, marketing, administration and initial production groups. Construction will begin soon and the first increment is expected to be completed within a year. If everything goes well, the second increment may be built within two years after the first building is occupied.

Security and space restrictions prohibit the telling of all the projects and the naming of all the industries who are contributing to more effective means of waging war against enemy submarines, but this brief synopsis is proof that now, as in the past, a considerable portion of the Navy's capability lies in the industrial might of the nation.

'THE REAL THING' FOR MIDSHIPMEN



OF THE 300 MIDSHIPMEN WHO VOLUNTEERED FOR A FAR EAST CRUISE, 40 EMBARKED AT YOKOSUKA, JAPAN, ON USS HORNET (CVS-12)

THE BIG aircraft carrier turned into the wind—pilots and crew had manned their planes, one was getting the turn-up on the catapult—normal procedure for the USS *Hornet*—but something was different.

The faces of 12 first class midshipmen were brighter because they anticipated their first catapult launch from a carrier. They had had their briefing in pre-flight *Tracker* procedures and now were standing by for the signal to be launched.

One by one the 12 S2F's of VS-38 rumbled up the flight deck for the catapult shot. Later Midshipman Blaine Timmers said, "It was like going into a whole new world." Another "middie," William Carlson of the University of Illinois, said, "I felt as if I had been slapped in the chest and then thrown to the sky."

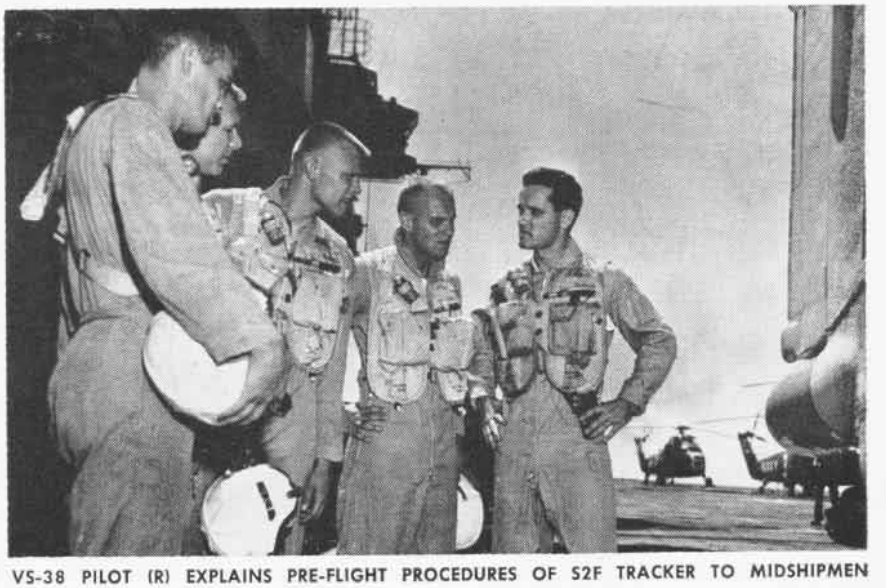
The experience aboard the *Hornet,* flagship of RAdm. Louis J. Kirn, ComCarDiv 19, was part of the big summer program for some 8000 midshipmen from the U.S. Naval Academy and the Naval Reserve Officers Training Corps Units in major universities throughout the country.

At Yokosuka, Japan, they embarked on their respective combatant ships. They were assigned to carriers, cruisers, destroyers, and submarines of the Seventh Fleet.

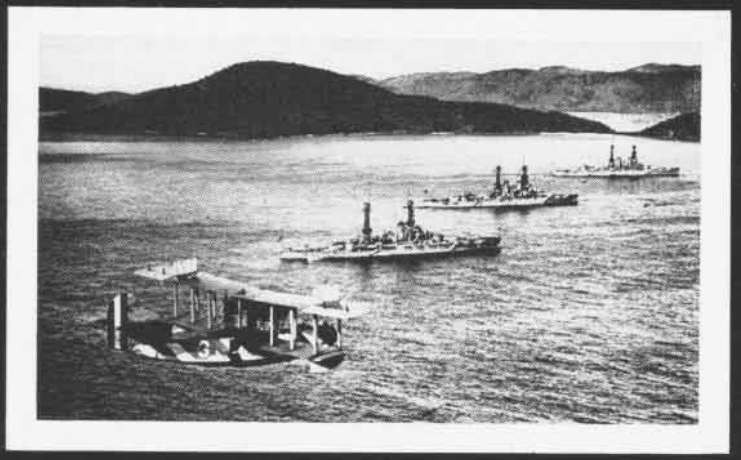
They were learning to apply, in shipboard practice, what they have learned in Naval Science classrooms during the school year. On the ships they stood watches, plotted contacts in the Combat Information Center, learned all that goes into the actual handling of a ship.

On the *Hornet,* the first class midshipmen were integrated with the ship's officers. They enjoyed the privileges as well as shouldered the responsibilities of commissioned officers.

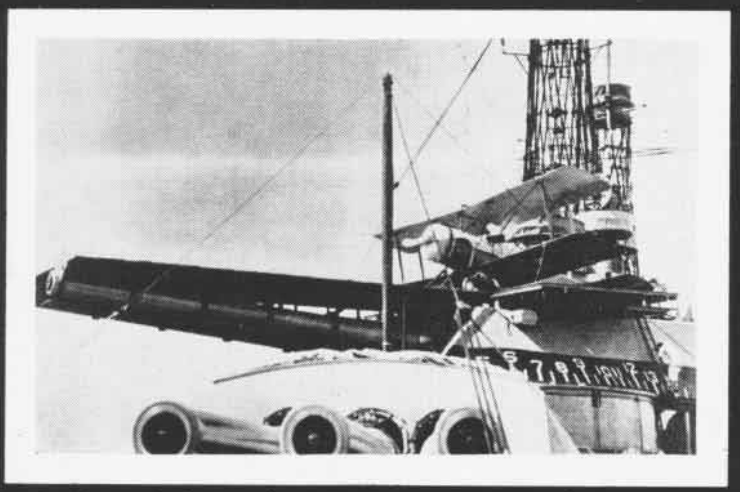
MIDSHIPMEN CHECK ON THEIR FLIGHT GEAR



VS-38 PILOT (R) EXPLAINS PRE-FLIGHT PROCEDURES OF S2F TRACKER TO MIDSHIPMEN



F5L patrol plane assigned to the Fleet Air Detachments



Sopwith Camels first operated from BB's in March

Semi-rigid O-1 dirigible obtained from Italy

DAI

The following inquiry
retary of the Navy:

"Can you put me in touc
some information in regard t
by the Government. I am pla
one by use of a megaphone."

On September 30th, the C-
made a flight to the State Fai
connection with recruiting. A
ranged for tomorrow.

C

The NC-4 is due to leave Bo
to Providence, R. I.

Running trials of the C-Type
ducted at Cape May, New Jersey.

Lighter-than-Air activities
tively recommenced at Cape May, Ne

Fleet

A request has been made for or
Commander Mason of his command at t
Key West, Florida, and directing hi
of Naval Operations for temporary du
of which he is to proceed to the Wes
aviation duty on the U.S.S. Aroostook
assigned to duty as Squadron Commande
of the Pacific Fleet Air Detachment.

Naval Aviation a

KRE-CCT

ATION NEWS BULLETIN

OBER 1, 1919

General

een addressed to the Sec-

h some one who can give me
balloons formerly used
to preach the Gospel from

iting

dirigible from Cape May
Trenton, New Jersey, in
lar flight has been ar-

ions

, Mass., today, en route

gible are being con-

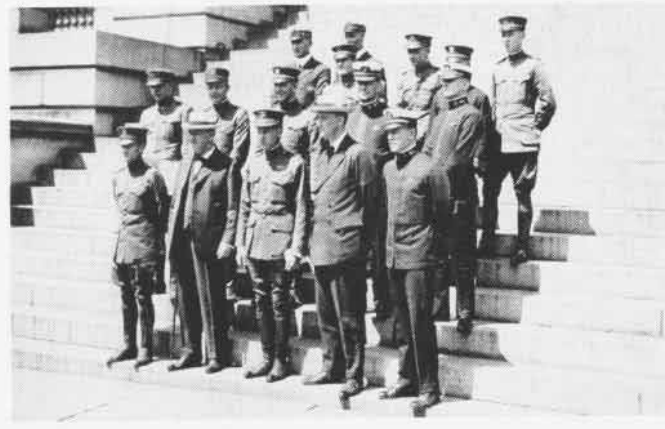
e said to have ac-
ney.

ion

relieving Lieutenant
val Air Station,
report to the Office
pon the completion
ut and report for
will probably be
the F-5 Squadron

ts "News" in 1919

First Trans Atlantic flight ends in Lisbon, 27 May



Sec Nav + Ass't Sec Nav with the Trans-Atlantic crews

A successful drop from an R6L torpedo plane

BULLPUP, *Navy's air-to-surface guided missile designed for close support is now operational in both the Sixth and Seventh Fleets. USS Saratoga deployed to the Mediterranean this fall with VA-34, the first Atlantic squadron equipped with Bullpup, aboard. Earlier this year, the Lexington went to WestPac with VA-212 embarked, also with Bullpup capability. VA-34 Skyhawks, above, can carry three; VA-212 Furies five. Air Force will use it, too.*

HEADING BACK FOR 'FIFTHS'

ONLY FIVE MEMBERS of the original Air Development Squadron Six are still around for the squadron's fifth consecutive Antarctic operation. An estimated 2000 officers and men have come and gone since VX-6 was formed in 1955 to provide polar air support.

They are Michael Baronick, AOC, Walter Long, PH1, Richard Goodell, AK1, Jerry Porter, YN2, and Jerry D. Cole, ABAN. Baronick is the only one who has been on the Antarctic continent during each of the summer seasons.

Most of his assignments were carried out at McMurdo Sound where he "wintered over" during the first *Deep Freeze* operation. He was petty officer in charge of a small group of men who established a remote fueling and communications camp on the Beardmore Glacier to help pave the way for the first aircraft landing in the South Pole, made by a VX-6 R4D.

Baronick was a crewmember of the R5D in which RAdm. Richard E. Byrd made his last flight over the South Pole on January 8, 1956.

Long reached the ice by ship in *Deep Freeze One,* riding a tanker to New Zealand and the icebreaker *Edisto* for the remainder of the trip. He remained behind for *Deep Freeze II,* but went south again in *Deep Freeze III.* He was cited by RAdm. George Dufek, task force commander, for his work in covering an Air Force *Globemaster* crash.

Porter got to the ice in the first and third operations, deploying to Ellsworth Station during *Deep Freeze III.*

Goodell is in Christchurch, N. Z., where he remained last year after the last ship and plane returned.

Cole spent his first three seasons at McMurdo Sound, wintering over there in *Deep Freeze III.*

Asked "Why do you go back?" Baronick answered in this way:

"In my opinion, the big reason men volunteer is spelled out in the word 'adventure.' It's something new—a challenge. Once you've been there, though, the feeling gets worn down after a couple of operations. Then it's just a job—an unusual one."

Long did not answer the question. But a glance at his record shows he is a member of the search and rescue team and thus a qualified parajumper.

● Ltjg. K. A. Williamson, Basic Training Group Five, NAAS SAUFLEY FIELD, made the 63,000th arrested landing aboard the USS *Antietam* when he dropped his T-28C aboard the ship. At the same time, Lt. William A. Lott, the LSO, also of BTG-5, made his 1000th accident free "cut" aboard.

Welcome Aboard, Brother

Paths Cross at Bottom of Earth

It's seldom a cold occasion when Navy brother meets Navy brother, but that's the way it will be this month when Ltjg. Ronald Oehlbeck meets his brother, Lt. Edward W., at McMurdo Sound in the Antarctic.

Both are members of Air Development Squadron Six and they haven't seen each other for three years.

Lt. Edward Oehlbeck joined the squadron in April, reporting from a Hawaii-based patrol squadron. His brother Ronald was "wintering over" in the Antarctic at the time.

The ranking brother flew to Christchurch, N. Z., in September, and is expected to be in the first plane that flies to the Antarctic this month.

Missiles for Training Use

NAATC, Reserves Get Sidewinders

On 30 July 1959, students in Advanced Training Unit 222, Kingsville, NAS CORPUS CHRISTI, began their training in F11F *Tigerjets* carrying *Sidewinders.*

This was in line with the Navy Department authorization for use of *Sidewinders* in the Naval Air Advanced Training Command and some Navy and Marine Corps Air Reserve Squadrons. All Advanced Training Units will train with the *Sidewinders.*

The *Sidewinders* — actual service missiles with inert motors and inert warheads—will be augmented into the squadrons to give pilots guided-missile experience. Enlisted men will get practical training in missile assembly, maintenance and loading.

Reserve and advanced training pilots will be able to use the Navy missile in all phases of its operation short of actual firing. In addition, the Advanced Command will be allowed a limited number of live missiles each month for practice firings.

Sidewinder, named for a rattlesnake, is a missile which strikes its target by homing on heat emitted by target aircraft.

In September 1958, *Sidewinder* became the first guided missile to destroy aircraft under combat conditions when Chinese Nationalists used it against Communist planes.

First reserve squadrons scheduled to get *Sidewinders* are at NAS GLENVIEW, DALLAS, LOS ALAMITOS.

WHO'S IN THE RIGHT HAND SEAT?

WHO FLIES in the right seat of the A3D? This question is often answered wrong. Everyone in Naval Aviation ought to know that in today's number one attack aircraft there is a *new man in the right seat.*

As a definite departure from former aircraft of the fleet, the A3D is a forerunner of things to come. The man in the right seat represents the biggest difference between the A3D and the standard Navy attack aircraft. He may be an officer or an enlisted man, but the main reason he is in the right seat is that he is a topnotch bombardier.

To do his job he must be adept at radar target interpretation and spend hours studying maps and radar photographs before launching on a strike mission. He has received extensive training in the Navy's arsenal of nuclear weapons. He must also be proficient in radar and celestial navigation. Owing to the high speed of the A3D travels, his celestial navigation procedures are considerably different from those of the prop type navigator and much more demanding. The official designation for his specialty is Bombardier/Navigator (B/N).

To prepare for his job in the A3D crew, the B/N must be formally trained and qualified. In Heavy Attack Wing One, which includes all the A3D attack squadrons of the Atlantic Fleet, this training is conducted by VAH-3 at Sanford, Florida. Since it takes eight and a half months to qualify a student bombardier/navigator, he represents, a large investment in training time and funds.

Introduction to the course begins simply: orientation, navigation equipment, radio, code, survival. But the sledding gets tougher.

Celestial theory, target predictions, radar target identification, aerology, simulator time, and ordnance follow in rapid succession. An examination follows the completion of each study division.

Interspersed with the academic course are day and night flights. In the air, students put to practical test their classroom knowledge.

Students selected for the course are highly motivated. The candidate is chosen from three main backgrounds: (*1*) he is a recent college graduate officer, new in the Navy, carefully screened before selection; (2) he is a qualified, highly motivated, limited duty officer; (3) he is an experienced, proficient enlisted man from the fleet, probably with all-weather attack experience. In the past, young pilots were processed through bombardier training. In the Atlantic Fleet, where the career type B/N is the objective, this practice has been discontinued. Heavy Attack Wing One enlisted bombardier/navigators include almost all ratings. A PH1 was recently graduated from the VAH-3 B/N course. Even a YN1 has served as a B/N in the Atlantic Fleet.

SANFORD HONORS LEADING BOMBARDIERS

A Bombardier/Navigator is assigned to his squadron immediately upon graduation. When his squadron is not aboard the carrier he continues his training at his home base in Sanford, where he has ready access to the centralized air intelligence data and training equipment maintained by HAW-1. He will compete against and rub elbows with more experienced bombardiers, all of them professional airmen.

In the picture showing the Sanford "totem pole" of the Top Ten Bombardiers for the competitive year, the names are from the top down as follows: Ltjg. William Maliczowski (VAH-11), A. M. Campbell, AEC (VAH-5), Ltjg. M. G. Heckler (VAH-5), T. R. Walton, ATC (VAH-5), Lt. Davenport (VAH-5), R. L. McDonald, AO1 (VAH-1), Ltjg. Austin (VAH-5), R. S. McNeill, AOC (VAH-3), Ltjg. McKee (VAH-9), and Ltjg. Lupone (VAH-5). Capt. J. D. Ramage, Commander of Heavy Attack Wing One and Cdr. I. M. Rowell, VAH-5 skipper, are looking at the display.

Success of the A3D has contributed to the development of a similar crew composition in other front line attack and fighter aircraft. So when you see an A3D launched for a mission, take a good look at that man in the right seat. He has a promising future as a specialist in an important and rapidly expanding field. He is a professional.


P. S. RISLEY, AO1, WORKS OUT PROBLEMS

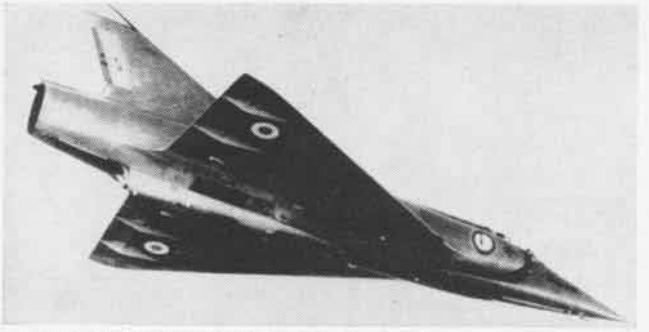
Jets Fly 4000-Mile Hop

2nd MAW Crusaders Prove Range

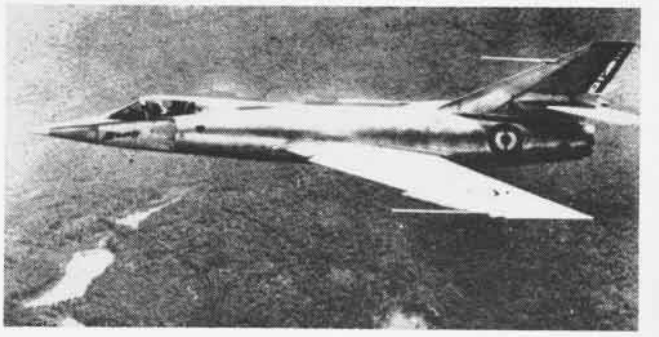
Six F8U *Crusader* jet fighters of VMF-122 and 312 flew 4000 miles non-stop by using in-flight refueling. Elapsed time was approximately nine hours, for an average speed of nearly 450 miles per hour.

The flight was made to prove the capability for world-wide deployment of Second Marine Aircraft Wing tactical elements.

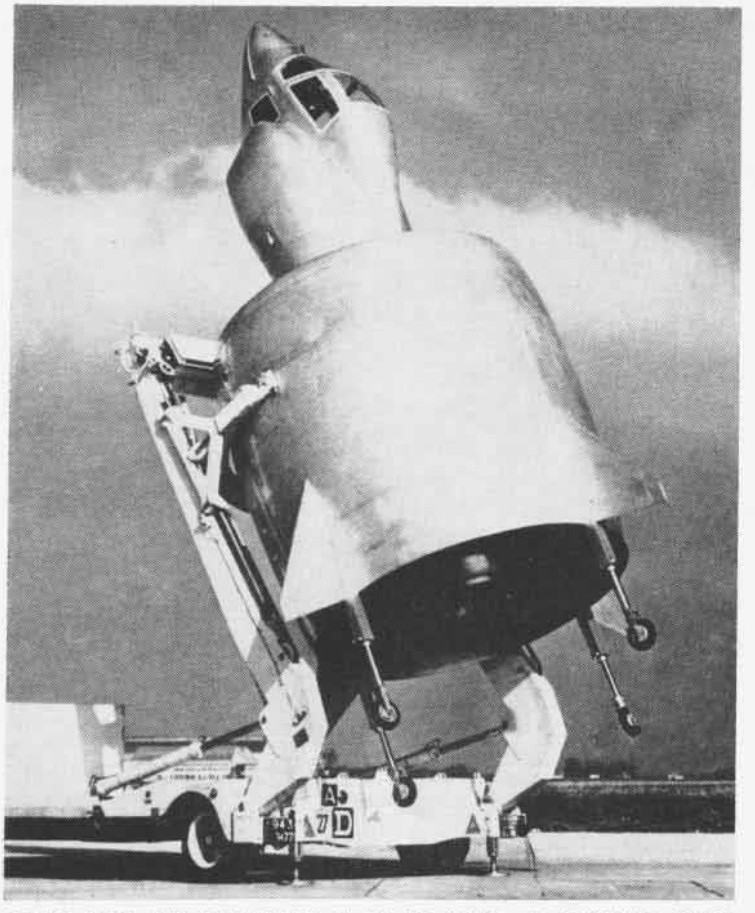
The *Crusaders* took off from MCAAS BEAUFORT, S. C., flew a pattern around Cherry Point, N. C., Atlanta, Ga., and Orlando, Fla., refueling off the coast near Charleston, S. C.



'MIRAGE III' WAS DESIGNED FOR HIGH ALTITUDE INTERCEPTION

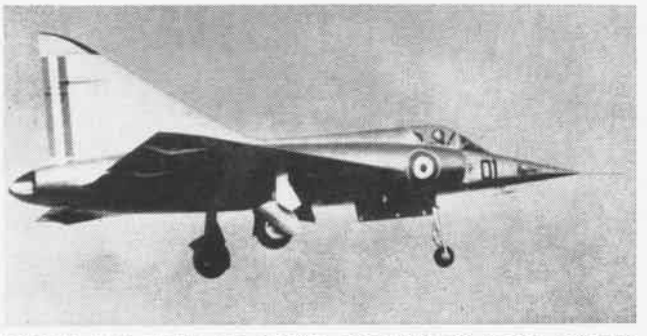


'ENTENDARD IV' IS NAVY INTERCEPTOR/GROUND ATTACK AIRCRAFT



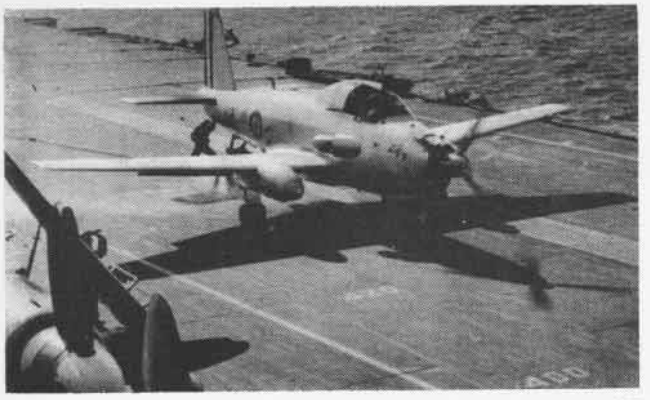
FRENCH VTOL JET 'COLEOPTERE' IS TO BE TESTED AT SUBSONIC SPEEDS

FRENCH MILITARY AIRCRAFT TYPES TODAY



'MIRAGE I' IS TWIN JET FIGHTER POWERED BY VIPER ENGINES

RUGGED SIPA 1100 CAN TAKE OFF FROM UNPREPARED AIRSTRIPS



THE BREGUET 1050, 'ALIZE,' IS TURBOPROP ANTISUB AIRCRAFT

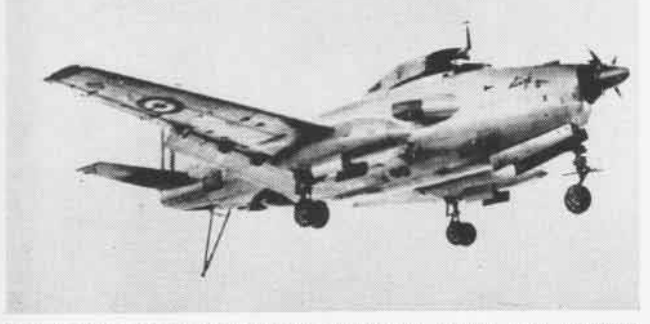
FOUGA C. M. 175 IS A DECK-LANDING AND FIGHTER TRAINER

In the years since World War II, French activity in aeronautical research and development has been outstanding. After overcoming the ravages of war and occupation, the French now occupy a leading position in European aviation. This is substantiated by the large number of military and civil aircraft under development and the export sale of all types of aircraft to many of the nations of the free world. Some of these aircraft by type include: *Caravelle, Noratlas, Vautour, Ouragan, Mystere, Broussard, Magister, Paris, Djinn, Alouette* and the missiles SS.10 and SS.11.

Of course, the French Air Force and the Naval Air Arm are the biggest recipients of French production. Interesting varieties of developmental work were on display at the 1959 Paris Air Show. Included in that show were the *Mirage* and *Etendard*, Breguet light fighters and experimental types, *Alize* turboprop ASW aircraft, new Coleopteres, and missiles, representing a wide range of modern design.

BREGUET 1100 IS LIGHT FIGHTER AND TACTICAL SUPPORT PLANE

BREGUET 1101 WAS DESIGNED TO MEET NATO SPECIFICATIONS



ARMAMENT OF 'ALIZE' CONSISTS CHIEFLY OF BOMBS AND ROCKETS

BREGUET 940 WITH FOUR TURBOPROPS IS EXPERIMENTAL DESIGN

Weekend Warrior NEWS

SKIPPER SHOWS *sub sighting and sinking site to stalwart P2V-5F crew of Oakland's VP-874.*

BOLLAN, *AM1, and Pavon AN, make quick engine assembly repair on HS-872 HSS-1.*

THREE VS-872 *men receive aircrewman's wings from squadron's outgoing commanding officer.*

FROM NORTH, EAST, WEST, SOUTH comes NEWS of the **N**avy's **E**fficient **W**arrior **S**quadrons. At this time of year the preponderance of items concerns summer cruise activities just completed. Now that the Selected Reserve concept has been in operation more than a year, the emphasis falls naturally on antisubmarine warfare. However, other missions are not neglected. Attack, fighter and tactical support, recruiting, community relations, are all part of Air Reserve.

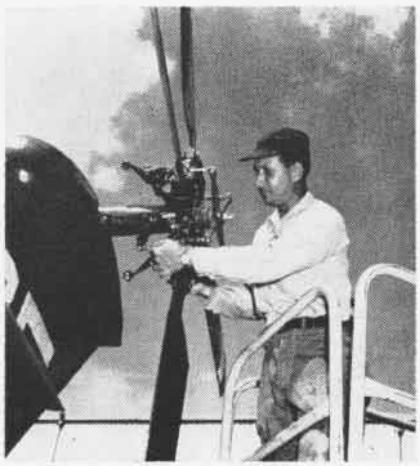
Operations at Oakland

Patrol Squadron 874, led by Cdr. Robert Lewis, left the Bay Area for its two-week training stint. Down at NAS NORTH ISLAND the P2V squadron, composed of 20 officers and 25 men, participated in ASW exercises, barrier patrols, rocket firing and navigational flights. Highlight of the duty was sighting a sub and theoretically sinking same.

A relative newcomer to the ranks of Oakland squadrons, HS-872 underwent its initial 14 day active duty for training period this summer. The first week was spent at the home base, which gave crew members a chance to get checked out in the basic syllabus.

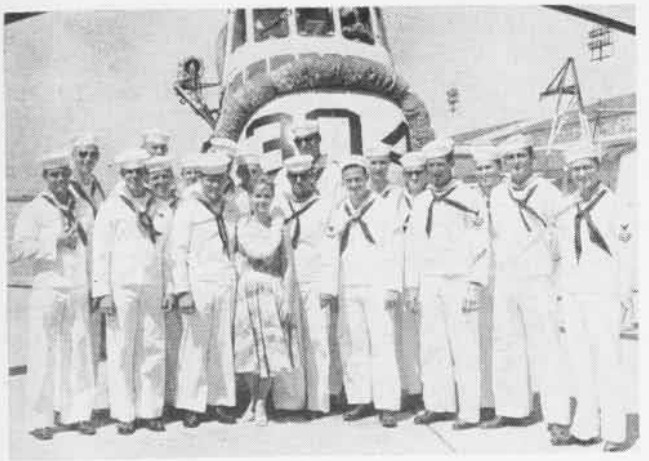
Squadron pilots ferried three HSS-1 helicopters to NAAS REAM FIELD for the final phase. Here, HS-4 went all-out to help the reservists get the most out of the intensive ASW schedule. Fleet personnel alternated with HS-872 pilots and sonarmen in all flight phases: searches, ranging and pinging.

ASW *equipment is operated by Frank ATR3, NARETU Los Al, Stask, AMH2, VP-815.*

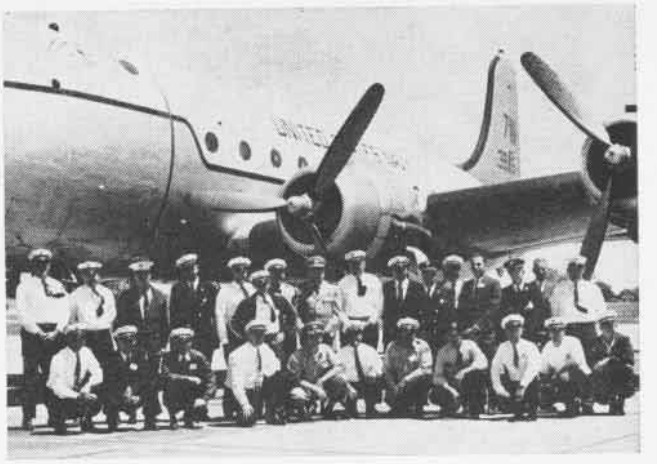


TAIL ROTOR *adjustment is made by Alianell, AD1, during HS-741 training cruise at Jax.*

MAYOR MORRISON, *BGen. LNG, sets out on an official helicopter ride with HS-821 pilots.*



LOOKING LIKE *a scene from "South Pacific," HS-772 squadron members pose with Debbie Reynolds. Lei adorning the chopper is her gift.*



FIRE CHIEFS AND *Marshalls from local communities gathered at NAS Willow Grove for symposium. The Navy worked closely with them.*

HS-872 was commissioned in 1958. Cdr. Raymond Edinger commands.

Another Oakland outfit which successfully combined its efforts with fleet units was Cdr. Bill Worden's VS-873. The S2F *Tracker* squadron also operated out of NAS NORTH ISLAND and participated in ASW maneuvers at sea.

For the past four consecutive years, Antisubmarine Squadron 872 has been the winner of the Noel Davis Trophy, designating it the best VS unit in the Naval Air Reserve Training Command. For three years of this period LCdr. Langton Richards has been the commanding officer. This summer he turned over the command to LCdr. Robert Mini. One of his final official acts as skipper was to present aircrewman's wings to three of his men. Left to right in the picture on opposite page are: H. G. Phillips, ATR2; J. M. Neath, AOCA; J. Warren, ADRC.

NAS Minneapolis Notes

Annually, the city of Minneapolis holds a 10-day summer festival known as the *Aquatennial.* As the ultimate in Navy-community relations, Adm. Arleigh Burke, Chief of Naval Operations, served, this year, as Grand Marshall for the parade which climaxes the celebration. He also addressed air station personnel on sea power and the Navy's role in defense.

The Weekend Warriors of VP-815 could not be present. For two weeks they trained as a unit at the Naval Air Reserve Electronics Unit at NAS LOS ALAMITOS, for formal instruction in the latest ASW techniques. By means of lectures and flights, the 31 officers and 46 men, led by LCdr. A. R. Larson, trained to be ready to augment regular forces in carrying out the Navy's role in national defense. This marks the first time an entire VP squadron trained together at NARETU rather than in groups.

News of NAS New Orleans

Mayor deLesseps S. Morrison of New Orleans wears two hats. He is also a Brigadier General in the Louisiana National Guard. When he wished to inspect Ship Island in the Gulf of Mexico as a possible site for future training, an HS-821 helicopter provided the transportation for an aerial survey. LCdr. R. A. Landry was pilot; Ltjg. H. E. Babin, co-pilot. Cdr. D. L. Whittaker is the commanding officer.

CPL. MARQUETTE *gives rifle training to Foy, 85-day airman recruit at NAS Lakehurst.*

A Crescent City squadron had the opportunity to train at the master jet base, NAS OCEANA, Virginia, this summer. Flying F9F *Cougars*, and headed by Cdr. G. L. Penner, VA-821 practiced intercept and attack maneuvers. The men from Louisiana, Florida, Mississippi and Texas also observed F8U, A4D and F4D operations.

A Look at Los Alamitos

For exercises with units of the Pacific Fleet, Weekend Warriors from NAS LOS ALAMITOS spent the two-week cruise period in the fiftieth state. HS-772 was the first NAR chopper squadron to operate outside the continental limits. The squadron's four HSS-1's were transported to NAS FORD ISLAND, aboard a seaplane tender.

Debbie Reynolds paid an Aloha visit. Cdr. F. A. Heacox's men chose her as HS-772 sweetheart.

Word of Willow Grove

Twenty-five Fire Chiefs and Marshals, representing as many different communities, attended an Aircraft Fire Fighting and Rescue Program Symposium at NAS WILLOW GROVE as guests of the commanding officer, Capt. L. R. McAboy.

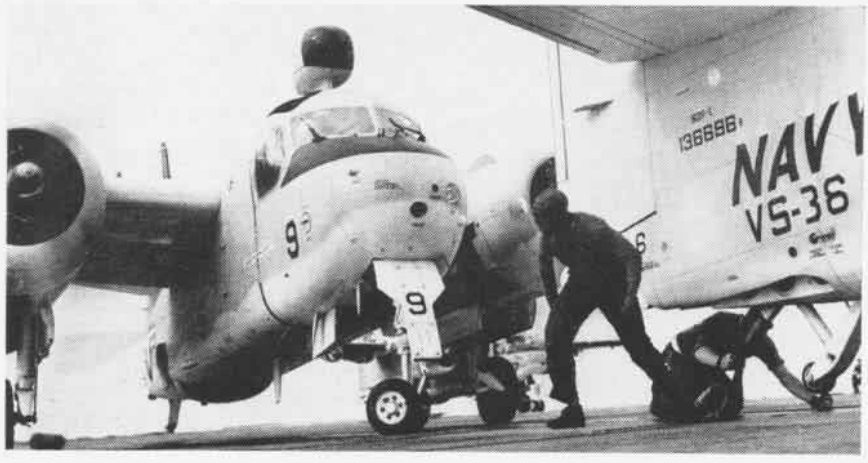
Flight Safety Officer, Cdr. Dan Downs, lectured on escape devices built into military aircraft and demonstrated these specific features on the TV-2, FJ-3, S2F and HUP.

The program also included an orientation flight in a helicopter. The symposium chairman was Mr. William Geissler, the air station Fire Chief.

THE ALFA FLAGSHIP IS USS VALLEY FORGE

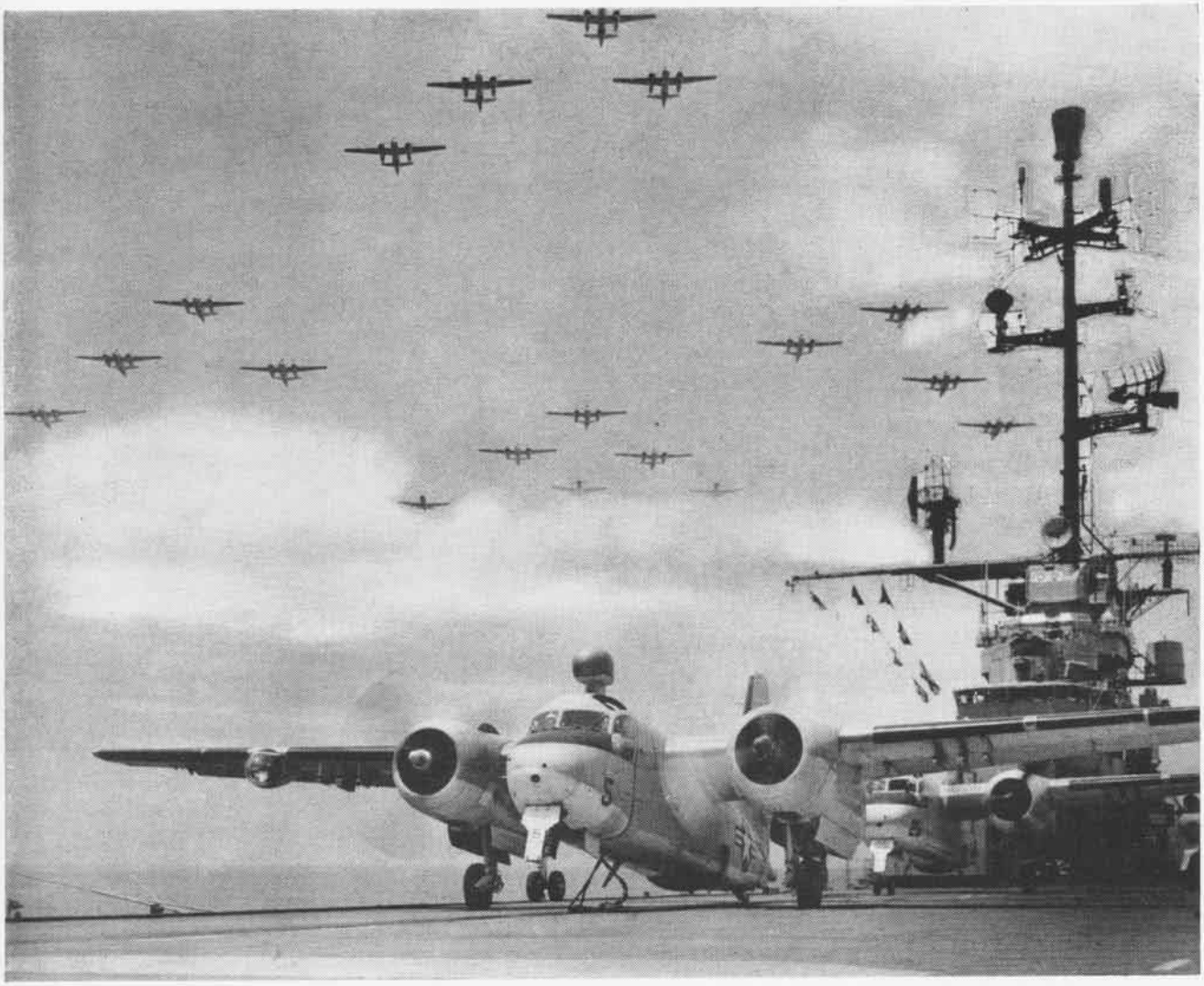
VS 36

'Let's do it yesterday' might well be the theme of Task Group ALFA as the famed sub-hunters pursue their special mission as a sea-going test center for antisubmarine procedures and equipment. A potent factor in ALFA's relentless search for improved techniques is VS-36 aboard the USS *Valley Forge*. The S2F squadron's 16-month association with ALFA has produced in all, 20,000 pilot hours, 3000 carrier landings and half a million man-hours of maintenance while making more than a dozen operational evaluations. VS-36's recent ORI rated 97% or wordwise, 'outstanding.' These scenes show the top Tracker team in action on the Happy Valley.



ROUND-THE-CLOCK OPERATIONS ROUTINE

VS-36 PILOT GETS A CAT SHOT



ASW SPELLS ENDLESS HOURS OF OPERATION FOR SHIP AND SQUADRON

LONG HOP ENDS WITH 'CUT'

LET'S LOOK AT THE RECORD

BOX, ROONEY, KAWALKOWSKI WON 'E'S

VF-84 Training for Meet

Pilots to be at Yuma in November

VF-84, NAS OCEANA, traded in their *Furies* for F8U-2's and immediately started training for the Fourth Annual Naval Air Weapons Meet, November 30 to December 4, at Yuma, Arizona.

They spent three weeks at NAS LEEWARD POINT, Guantanamo Bay, concentrating on supersonic gunnery. Nine pilots qualified in gunnery and three earned the Navy's coveted Battle "E" in supersonic gunnery.

These three were LCdr. F. T. Rooney, Ltjg. R. E. Kawalkowski, R. E. Box.

Winners Get ASW Awards

Squadrons Receive Isbell Trophy

Winners of the new Captain Arnold Jay Isbell Trophy for excellence in air antisubmarine warfare have been announced by the Navy.

East Coast squadrons receiving the honor included Patrol Squadrons 10 and 44 and Antisubmarine Squadron 27, located at Brunswick, Maine; Norfolk, Virginia; and Oceana, Virginia.

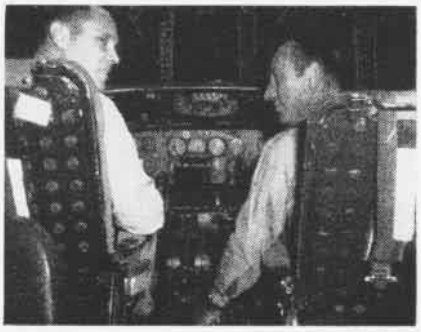
West Coast squadrons included Patrol Squadrons 19 and 48 and Air Antisubmarine Squadron 38. VP-48 and VS-38 are homeported at NAS North Island, San Diego, California. Homeport for VP-19 is NAS Alameda, California.

Adm. James S. Russell, Vice Chief of Naval Operations, presented the engraved plaques representing the Isbell Trophy to VAdm. Alfred M. Pride, then Commander, Naval Air Force, Pacific. East coast plaques will be presented by the local commands.

The award will be presented annually to Naval Aviation squadrons which achieve excellence in air antisubmarine warfare. The trophy is named for the late Capt. Arnold Jay Isbell, who distinguished himself during WW II in conducting antisubmarine warfare against hostile submarines thwarting shipping along convoy routes from the U.S. to North Africa.

The trophy is located in Washington, D. C. The engraved plaques are kept in permanent custody by winning squadrons. The Martin Company of Baltimore, Maryland, co-sponsors the Isbell award program.

Commanding the winning squadrons are: VP-10, Cdr. William T. Rapp; VP-44, Cdr. Larry W. Frawley; VS-27, Cdr. R. E. Taylor; VP-19, Cdr. Edward E. Wood; VP-48, Cdr. Kermit M. E. Miller; and VS-38, Cdr. Paul H. A. Spears.



DURING A REGULAR FLIGHT, *LCdr. R. P. Calcagne (L) of VX-6 flying a R7V Constellation from Quonset to Idlewild, logged his 10,000th pilot hour. He has flown for 15 years. Lt. Darold Reckling is co-pilot.*

VAH-4 Has Record Month

496 Radar Bombing Systems Runs

Cdr. J. J. Emanski, Jr., commanding officer of Heavy Attack Squadron Four, thinks he has one of the best "pitching staffs" in Major League Bombing. And he says he has the records to prove it.

VAH-4, home-based at NAS WHIDBEY ISLAND, Washington, compiled a record total of 496 scored RBS (Radar Bombing System) runs during a single month. VAH-4 flies the A3D's.

To the uninitiated, a completed RBS run is, roughly speaking, comparable to pitching a full inning of baseball.

Things have to be well-planned and working perfectly. It's not uncommon for a bombardier to have a streak of control trouble and toss a few wild pitches out in the boondocks.

However, the phenomenal 496 mark was only one of the several records established by the "Blue Bandits" during a remarkable month. Records included: most runs by an individual bombardier for a month, 88, and highest average number of RBS runs per active bombardier, 49.6.

Outstanding record was made by Ens. Bob Hager who "pitched" 88 innings—a record for Heavy Attack.

T-28 Gunnery Record Falls

Whiting Instructor Shoots 37.5%

When Lt. Harold Barnes, a Whiting Field gunnery instructor, demonstrates the fine art of aerial marksmanship, he does a good job of it. During one such exhibition, while he was acquainting his students with gunnery patterns, Lt. Barnes achieved a total of 75 hits in 200 rounds, thus setting a new record at the Florida base.

The Whiting release points out this is quite a feat when consideration is given to the fact that T-28 gun pods are not rigged for high percentage shooting. A score of 10% is classed as good, 20% is outstanding, and 30% is labeled "rare."

A look at Lt. Barnes' previous accomplishments reveals he is not an overnight sensation when it comes to gunnery. While serving with VF-13 he earned a total of six air gunnery "E's" during one year's competition in the Atlantic Fleet. His previous high score was 75 percent which he recorded twice while flying *Cougars.*

LT. BARNES AFTER FIRING RECORD 37.5%

Rare Reprieve is Recalled

Court Action Bared in '17 Case

A safety-minded friend of ours, who dwells on a lower deck of the Pentagon, urged us to reprint the following report as an example of pioneer pilot perseverance and related matters. We do so, noting that the verbatim extract entitled "Results of Military Courts" is taken from *Flight Safety Monthly Summary* of December 1917, issued by the Royal Flying Corps.

Major W. de kitkat-Watney's Nieuport Scout was extensively damaged when it failed to become airborne.

The original Court of Inquiry found that the primary cause of the accident was carelessness and poor airmanship in the part of a very experienced pilot.

The Commandant General, however, not being wholly convinced that Maj. W. de k-Watney could be guilty of so culpable a mistake ordered that the Court be re-convened.

After extensive inquiries and lengthy discussions with the Meteorological Officer and Astronomer Royal, the court came to the conclusion that the pilot unfortunately was authorised to fly his aircraft on a day when there was absolutely no lift in the air and could not be held responsible for the accident.

We extend our congratulations to Maj. W. de kitkat-Watney on his reprieve and also on his engagement to the Commandant General's daughter which was announced shortly before the accident.

NAVY BALLOONIST, *Cdr. Malcolm D. Ross, receives Distinguished Flying Cross from Asst. SecNav (R&D) James H. Wakelin. With late LCdr. M. Lee Lewis, Cdr. Ross made record balloon flight in July of 1958.*

Missile Practice Held

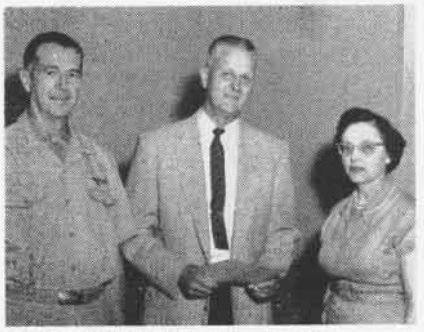
VU-3 Claims Target Launch Record

VU-3, based near Brown Field claims a record in launching 25 Ryan-built KDA *Firebee* target drones in three days.

The high speed jet targets were launched from a P2V *Neptune* and 2 JD-1 launch planes. The feat required round-the-clock operation for VU-3 pilots, crews and maintenance men.

The drones were fired on by pilots flying jet fighters armed with *Sidewinder* and *Sparrow III* missiles. The planes were from air groups of the carriers USS *Midway* and USS *Hancock*.

The three-day operation was held to perfect the missile combat readiness of the two carriers' squadrons just prior to their deployment to the Far East with the U.S. Seventh Fleet.



RADM. FITZHUGH LEE, *CNATechTra, presents Meritorious Civil Service Award to John C. Howard, civilian supervisory education officer at Memphis. In four years he saved the Navy over $100,000. Mrs. Howard was on hand.*

Aviation Mechanic Hero

Awarded Medal for Courageous Act

A 25-year-old Navy man from Air Barrier Service Squadron Two was awarded the Navy-Marine Corps Medal for courageous action. The presentation was made during full dress ceremonies at NAS BARBER'S POINT.

Jimmy W. Crum, AM2, was presented the medal by RAdm. Benjamin E. Moore, Pacific Barrier Commander, just before relinquishing command.

The coveted award went to Crum for rescuing Makaha resident Peter Angelita from the towering surf off Makaha Beach. After getting Angelita ashore, Crum administered mouth-to-mouth resuscitation and revived the victim after a three-hour ordeal.

LADDER CLIMBERS *in FASRon 891 NAS Seattle, these new CPO's entered squadron as recruits. Surrounding leading chief E. R. Calhoun (C) are P. J. Baccetti, D. L. Mann, G. W. Jackson and W. D. Houlihan, from left.*

WV-2 Aircraft Commander

VW-14 Claims Youngest on Barrier

Ltjg. Samuel (Pete) Huhn is, according to Early Warning Squadron 14, the first aviator of his rank and age (26) to fly the Pacific Barrier as Aircraft Commander.

To be designated as Aircraft Commander a WV-2 pilot must have: completed 2000 flight hours, 1400 of which must be pilot hours; logged a minimum of 1000 hours in a *Connie*; qualified as first navigator; and completed several Naval training schools, such as Survival, Pilot's Ground, and Operational Flight Training.

Ltjg. Huhn has been with VW-14 since July 1957.

Contract for A2F-1 Tailpipe

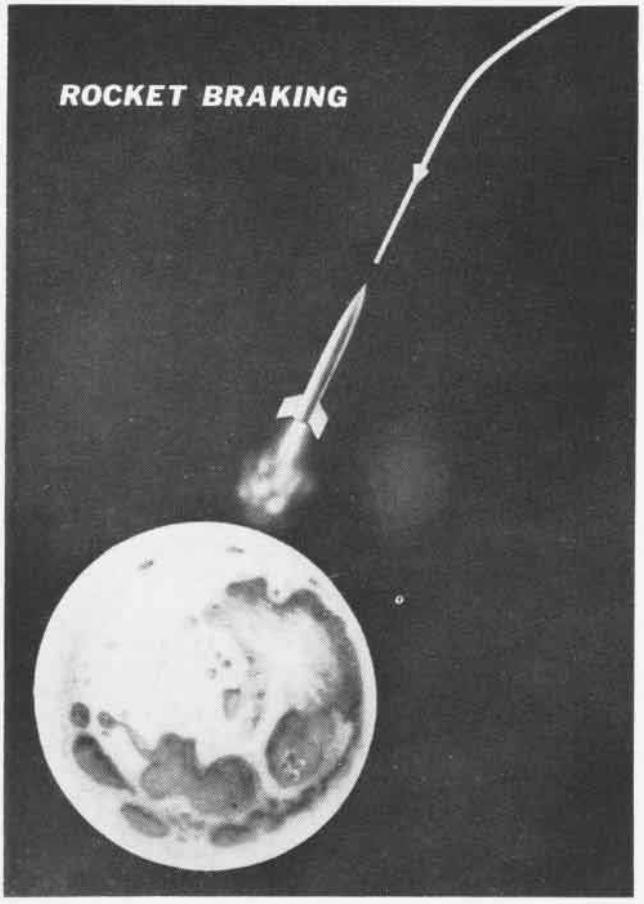
Would Shorten Take-offs, Landings

A $500,000 research and development contract for design and construction of a special type jet engine tailpipe to help provide unusual performance capability for the new Navy A2F-1 carrierborne attack plane, has been awarded to Ryan Aeronautical Company by Grumman Aircraft Engineering Corporation.

Details of the arrangement were not disclosed, but the tailpipe will enable the plane to make extremely short take-offs and landings.

Ryan's new high energy forming facilities, in which dynamite is used for instantaneous forming of parts, will be employed in the fabrication of one of the major components of the tailpipe.

To meet Grumman specifications, the tailpipe will be one of the lightest steel alloy structures of its kind.



SPACE MYSTERY AND MASTERY PART 3

OPERATIONS IN SPACE

ARTIFICIAL EARTH SATELLITES

An artificial satellite of the Earth is simply a man-made moon. In revolving about the Earth it must obey the same laws that the natural moon does, and that the planets obey in revolving about the sun. To create such an artificial satellite, one must use a rocket vehicle that during its motion must also obey the laws of celestial mechanics properly modified to take into account the rocket thrust during the period of burning.

The launching vehicle must perform two tasks. First, it must lift the satellite to the "altitude of injection" into an orbit. Secondly, it must at that altitude give the satellite the proper speed in the proper direction to inject it into a stable orbit.

Imagine that the satellite has been lifted to the desired orbital altitude and is about to be injected into its orbit. If one assumed the satellite to be momentarily stationary and simply permitted it to drop, it would fall straight toward the center of the Earth.

Suppose that instead of just dropping the intended satellite it were given a slight nudge horizontally. In this case the object again would fall toward the ground but because of the horizontal nudge would impact at some distance away from the point directly below the starting point. With a more forceful nudge horizontally the satellite impact point can be moved even farther away from the point directly below, and with a sufficiently hard shove the impact point on the Earth would be exactly half way around the Earth from the point directly below the starting point. With a still harder nudge, it can be seen (neglecting the resisting effect of the atmosphere) that the satellite would actually miss the Earth and after swinging by the half way point, would swing outward and upward again. It would then return to its starting point to repeat its swing around the Earth. In other words, it would be in an orbit about the Earth.

With a sufficiently forceful thrust on the satellite in a horizontal direction it is possible to make the object follow a circular path and for greater velocities than the circular velocity, the satellite will follow elliptic paths in which the launching point is the nearest point to the Earth, or the "perigee." If the injection velocity is increased to 1.4 times the circular velocity, then the satellite will be projected into a parabolic orbit and will escape.

For injection speeds greater than 1.4 times the circular velocity the orbit will be a hyperbola, and again the satellite will escape.

If the injection is made not in the horizontal direction then the perigee will lie at a lower altitude than the injection altitude. It follows that if the injection is made at too steep an angle the perigee will be too deep in the atmosphere and the satellite's lifetime will be shortened by atmospheric resistance which reduces its speed below that required for orbiting. With too steep a trajectory, the perigee will lie inside Earth and the satellite will impact the surface.

The periods of revolution of an artificial satellite in circular orbit about the Earth are listed in Table 2. The periods for orbits of equal semimajor axes would be the same. The satellite's speed in a 320 kilometer (200 mile) altitude orbit is approximately eight kilometers (five miles) per second, while the speed in a 380,000 kilometer (235,000 mile) orbit, corresponding to that of the natural moon, is about one kilometer (0.6 miles) per second.

The orbit at 36,000 kilometers (22,000 miles) altitude is particularly interesting inasmuch as the period is exactly one day. A satellite launched eastward in such an orbit above the equator would remain above the same spot on Earth. One launched at an angle to the Earth's equator but at 36,000 kilometers altitude, although it would not remain above the same spot on the Earth, would remain in

TABLE 2

PERIOD OF REVOLUTION OF A SATELLITE IN A CIRCULAR ORBIT ABOUT THE EARTH

Height above the earth, miles	Approximate period
0*	84 min
200	90 min
1,000	2 hours
22,000	1 day
235,000	1 lunar month

* Ignoring the presence of the atmosphere

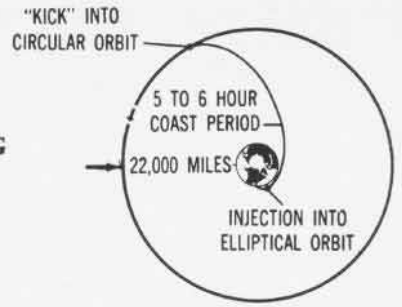
the vicinity of its initial meridian, swinging north and south of the equator as it revolved in its orbit.

The plane of the satellite orbit is fixed in space except for effects of the Earth's bulge. The position of this plane is not affected at all by the rotation of the Earth. As the satellite revolves in its orbit the motion of the earth rotating on its axis causes the suborbital points to move westward over the ground. As a result, in general the track of the satellite over the ground crisscrosses the belt on the Earth lying between the northernmost latitude through which the satellite goes and the southernmost latitude. When placing observing stations to track the satellite or to receive radio data from it, this fact of the Earth's rotation must be kept in mind.

The previous discussion of the behavior of an artificial Earth satellite assumed a perfectly spherical Earth. However, the Earth is not perfectly spherical but is some 21 kilometers (13 miles) flatter at the poles than at the equator. The equatorial bulge has an effect on the plane of the satellite's motion—a gradual westward rotation of the orbital plane.

SPACE PROBES

By launching a payload at a sufficiently great speed, a rocket can be used to project scientific instruments into interplanetary space. Such payloads are called space probes. If the aim of such a space probe is simply to make measurements deep in space far from Earth, without any particular reference to any celestial body such as the moon or a planet, then it suffices to project the object at a sufficiently great speed in a generally outward direction. For such a mission,



METHOD FOR PLACING 24 HOUR SATELLITE

guidance requirements are at a minimum. On the other hand, if for example, it is desired to project the object close to the moon or close to Venus then stringent guidance and timing requirements must be met.

Velocity requirements vary for different missions. For missions other than those connected with the Earth and moon, it becomes important to recall the presence of the sun. It must be kept in mind that escape from the Earth does not imply escape from the solar system. In order to escape from the sun at a distance of the Earth from the sun, a body must have a velocity slightly in excess of 42 kilometers (26 miles) per second. Thus, an object projected from the Earth at Earth escape velocity would, after moving some distance from the Earth, be in orbit about the sun at the Earth's distance and moving at roughly the Earth's velocity, which is 30 kilometers per second.

In order to make such an object escape from the sun, it would be necessary to add 12 kilometers (7½ miles) per second to bring its total velocity up to 42 kilometers per second. This velocity would have to be added in the direction of motion in the Earth's orbit.

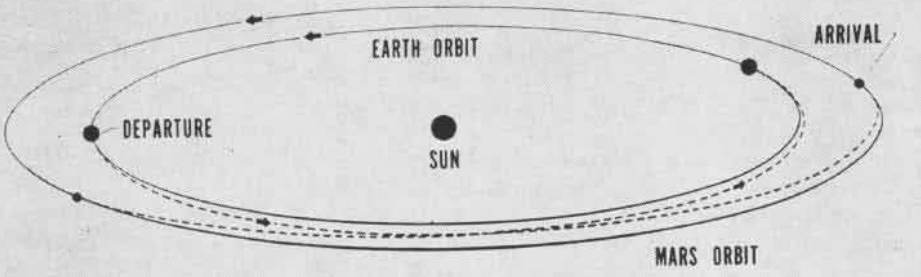
On the other hand, suppose that one wished to send a solar probe directly into the surface of the sun. This could be done by "dropping" the object into the sun. The object would first require a velocity of seven miles per second to escape from Earth. This speed is entirely used up in getting away from the Earth into an orbit about the sun at the Earth's distance and at essentially the Earth's speed, which is 18½ miles per second. In order to cause the object to drop straight into the sun, it would be necessary to "kill off" the 30 kilometers per second about the sun by firing a rocket in the direction opposite to the direction of motion in the Earth's orbit. The object would then proceed to fall into the sun, reaching it in about 64 days.

At the present stage of technology, lunar and Earth escape missions are definitely practical, while escape from the sun in the direction of the Earth's orbit is not yet possible with useful payloads. An intermediate type mission such as a flight to Venus or Mars, with a small but useful payload, along a minimum energy orbit, would require about 14 kilometers (8½ miles) per second total velocity. This is also practicable at the present time, but dropping an object directly into the sun is not yet feasible.

LANDINGS ON THE MOON AND PLANETS

When vehicles capable of carrying adequate payloads to the moon and planets come into being, it will be possible to land instruments and, later, man on their surfaces. In

MINIMUM-ENERGY FLIGHT PATH FOR MARS ROUND TRIP



TIME IN DAYS FOR MARS JOURNEY

SYSTEM	ESCAPE FROM EARTH	COAST	DESCENT TO MARS ORBIT	WAIT	TOTAL
$\frac{\text{WEIGHT}}{\text{THRUST}} = 5{,}000$	59	259	31	403	1062
HIGH THRUST ROCKET	—	259	—	455	973

the case of the moon, where no appreciable atmosphere exists, it will be necessary to use rockets to retard the incoming object in order that it may land at acceptable speeds. Without such retarding rockets, crash landings occur.

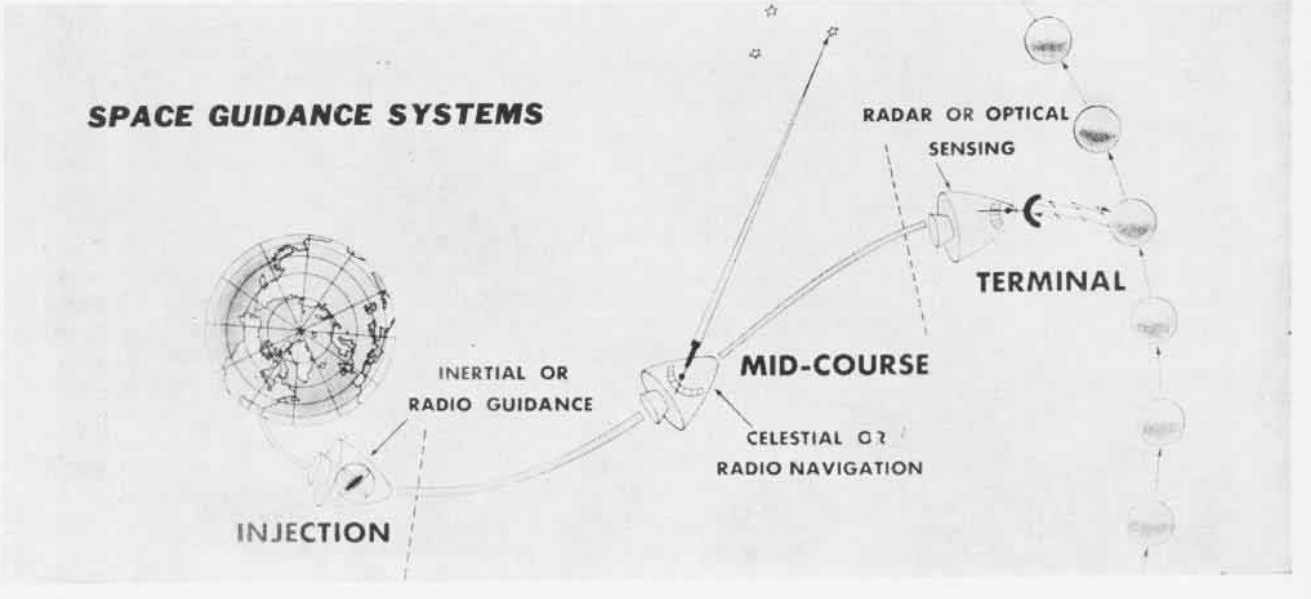
For the planets such as Venus and Mars such braking rockets can also be used to slow down the motion of the incoming object, but since these planets both have atmospheres, the atmosphere can be used to cushion the approach. This can be done either by using the drag of the resisting atmosphere or its lifting effect on appropriate lifting surfaces. The velocity of escape from the surface of the moon or planet in question provides a rough measure of the gravitation that must be counteracted.

When return of the equipment from the moon or planet is required, then this escape velocity must again be provided to the portion of the payload that takes off for the return. On returning to Earth, once again braking rockets may be used to slow the object down for recovery at the ground, or the Earth's atmosphere may be used either through its drag or its lift to cushion the object's return.

NAVIGATION AND GUIDANCE

The launching of space vehicles on missions to the planets will require navigational and guidance techniques beyond those that are now common to operations in the vicinity of Earth. There are several possible approaches. For example, the rocket might be given its complete guidance during the initial burning period in the vicinity of the Earth. After this initial period, the rocket would then be coasting according to the laws of celestial mechanics. This technique requires extreme accuracy at burnout, both in the direction of the motion of the rocket and in its final speed. If the rocket were being launched to Venus by this technique and it missed its burnout velocity by more than one-sixth meter (one-half foot) per second from the necessary 11,000 meters (37,000 feet) per second, then it would miss the planet. Such accuracy is not currently obtainable.

To overcome this difficulty it will be necessary to provide vehicles with onboard guidance that will permit corrections as the planet is approached. This will necessitate



carrying side rockets, special attitude control systems, retro-rockets, and an adequate communications system to permit sending remote instructions and commands.

It must be remembered in this connection that within the solar system all is in motion. One cannot ever expect to be able to repeat a previous "shot," for the relative positions of the various bodies affecting the motion of the vehicle in its flight from Earth to the chosen planet will never be the same. It will be necessary, therefore, to rely on very careful calculations of the flight trajectories for each mission, obtained through use of large electronic computers.

TRACKING AND COMMUNICATIONS

In order to be able to keep track of the various satellites and space probes launched, it is necessary to have a widespread tracking network at the Earth's surface. The radio frequencies used must be those that will penetrate the ionosphere without distortion and absorption, hence they must be in the range, say, above 100 megacycles.

Because it is not yet possible to generate very large powers in the probes, it is necessary to have at the ground station large antenna dishes or their equivalent for reception of signals from the deep space probes. The requirement is not too severe in the case of near satellites of the Earth, but it becomes severe as planetary distances are contemplated.

To minimize the power requirement it may often be necessary to reduce the rate at which information is transmitted from the satellite and received on the ground to very low frequencies, a fraction of a cycle per second.

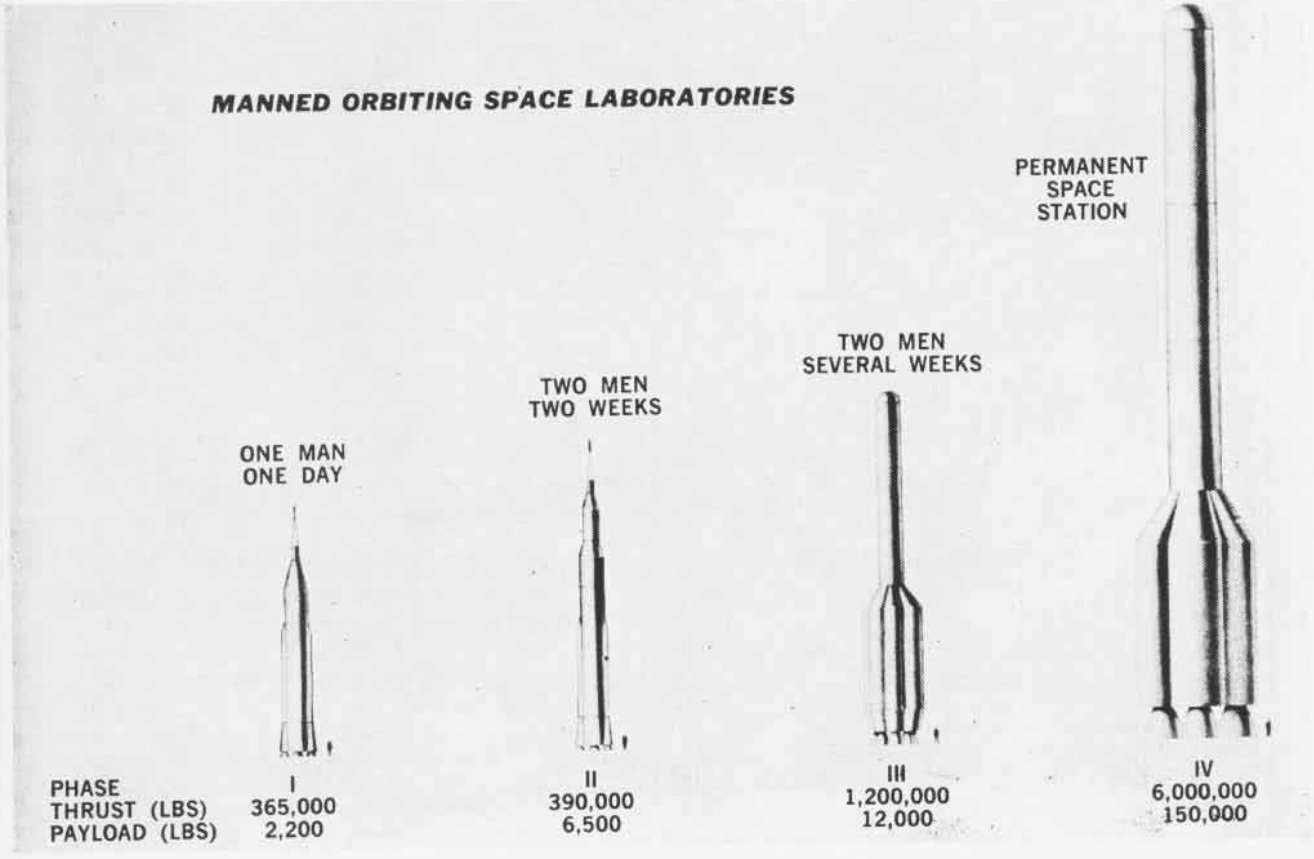
MAN IN SPACE

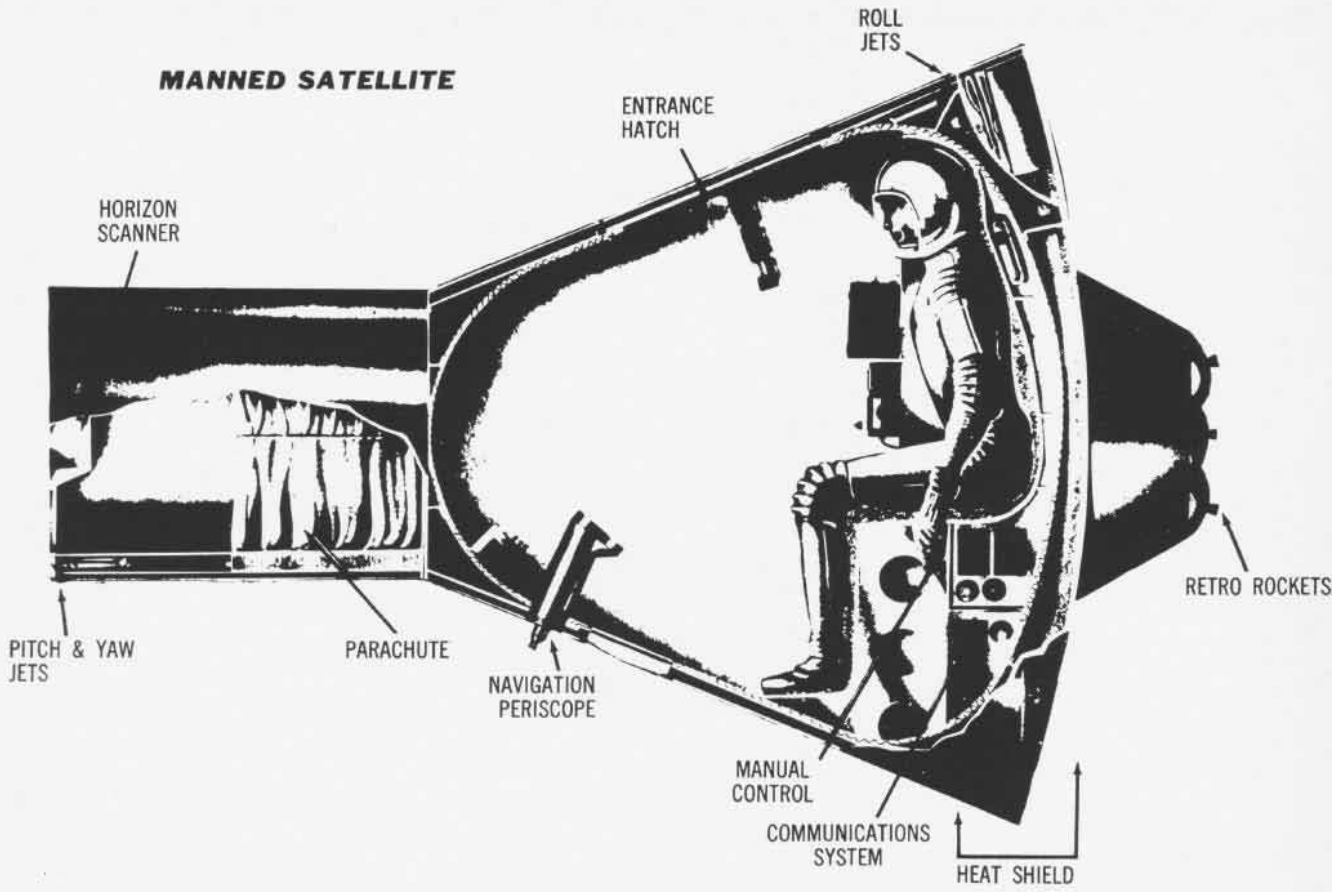
The complete knowledge space scientists seek requires man's personal participation in extraterrestrial research. Instrumented probes can provide a great amount of important data, but no matter how efficiently they operate there still remain certain tasks which require human judgment, vision and ability to analyze findings. Consider, for instance, the value of a research laboratory in space, in which man could conduct fundamental researches in both physics and biology.

Preparations are now being made to put man in space, but there are a great many problems which need solution before he can venture far beyond the atmosphere and return safely. The problems are compounded by distance and by the time he must spend away from Earth.

The problems lie in two main areas: bio-medical, involving man's ability to survive in a completely alien environment, and vehicular, involving the design and construction of spacecraft which can carry humans. They are naturally very closely related.

To survive in the near-vacuum of space, man needs considerably more in the way of structure and equipment than do instrumental probes. As atmospheric pressure decreases, the boiling point of liquids drops. Body fluids boil at any point above 20 kilometers (63,000 feet) altitude, so the spaceman must be equipped with a pressurized environment close to that to which he has become adapted through life on Earth. He must have oxygen to breathe and there is





none in space, so it must be provided. In the process of breathing, he creates carbon dioxide, which must be removed from his capsule or vehicle. Above the protective layer of atmosphere that filters the sun's rays, the side of the vehicle nearest the sun would be heated red-hot, while the other side would be freezing, so the space vehicle needs a highly efficient air conditioning system. Humidity and odors must also be controlled.

The spaceman will also be subjected to bombardment by potentially harmful cosmic radiation, no problem on Earth because again the atmosphere serves as a protective shield.

As manned space technology becomes more advanced, there will be requirements for the spaceman to venture outside his vehicle for landings on the moon or the planets. Thus, he will need equipment—a space suite—containing nearly all the protective elements built into a space vehicle.

During the launching period, the spaceman will encounter very high acceleration forces, or "G" forces, which increase his equivalent weight by several times and subject him to a disagreeable "crush." Similar forces will be encountered on deceleration, as the vehicle slows down to a speed which will permit it to re-enter the atmosphere without burning up from air friction.

In an Earth orbit or in "free fall," the spaceman will become weightless, a condition found not unpleasant in experiments to date where weightlessness has been induced for a period measured in minutes. Conceivably, it could have adverse psychological and physiological effects when sustained for long periods of time.

There are other psychological problems, such as man's reaction to a routine in the absence of the normal Earth day-night cycle and the effects of prolonged confinement and isolation from the familiar world.

Hand-in-hand with these problems is the task of building the space vehicle. Obviously, to carry one or more men, their instruments, their equipment for survival and what amounts to a complete artificial Earth environment, large payloads will be needed, increasing thrust requirements. The artificial Earth environment itself needs protection from the space environment; for instance, the possibility of hull puncture by a micrometeorite must be taken into consideration in designing the structure.

The factor of vehicular reliability is an important one, and its importance increases in proportion to the duration of a specified mission. Some trips even within the solar system could take months or even years to complete, and during that time every minute piece of equipment aboard the vehicle must perform perfectly.

In all these areas, a great deal of research is under way. Some of this research has already shown that some of the problems are less serious than once thought, but it remains to demonstrate the fact in the actual space environment. Space research on Earth can provide only partial answers. In addition, it is quite possible that actual penetration of space will bring new problems of which we are not yet aware.

There is, however, little doubt today that man can safely enter space, and the first such experiments will serve to show to what extent man is able to explore the universe.

Dallas Men Prove Ingenious

Build New Oxygen Purging System

At NAS DALLAS, two stationkeepers, J. L. Jones, AD1, and J. D. Allen, AM2, did not like the makeshift oxygen system purger furnished them so they built one they did like. Not only did they like it, but their chief, Rufus Bond, ADC, was enthusiastic about it.

Oxygen systems, which are used to store liquid oxygen, must be kept immaculately clean. A tiny particle of noxious material or water vapor can cause extreme discomfort to a pilot or failure of the oxygen system. Liquid oxygen systems are purged with nitrogen heated to about 150 degrees Fahrenheit which is flushed through the systems.

Original equipment furnished to do this purging was not very efficient. Only one system could be purged at a time. This device required not only constant attention by an oxygen specialist but also constant adjustment.

Pooling their talents, Jones and Allen in their spare time came up with "a portable, multi-purging device for liquid oxygen systems." It is trouble-free, semi-automatic and requires no constant attention. It can purge eight oxygen systems at once, and it can be used to purge even more units at the same time with slight modifications.

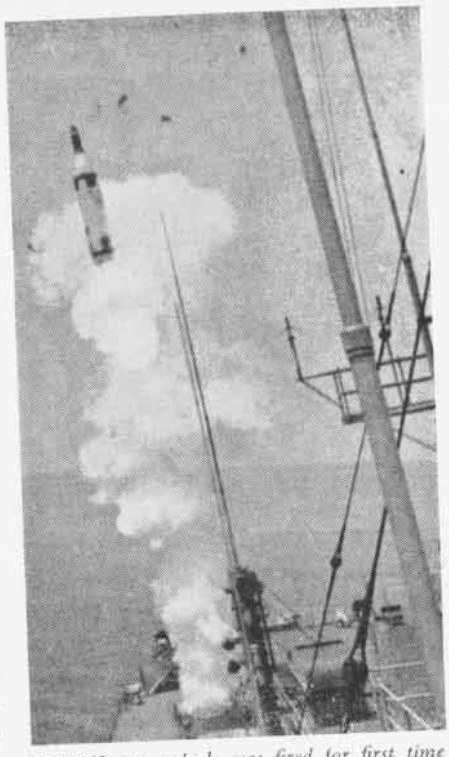
VIP Visits the Independence

Given Ride in A3D Skywarrior

Congressman Daniel J. Flood was catapulted off the supercarrier USS *Independence* in a twin jet A3D *Skywarrior* during operations off the Virginia Capes. The plane was piloted by Cdr. Sid Baney, C.O. of Heavy Attack Squadron One, with J. D. Gaskins, AD1, as third crewman.

After the flight, the Pennsylvania Congressman expressed enthusiasm for the easy handling qualities of the Navy's largest carrier-based aircraft. The speed and efficiency of the *Independence* in launching and recovering the 35-ton Douglas bomber also impressed him.

During his inspection tour on the *Independence,* Congressman Flood acquainted himself with the modern carrier and the complex machinery and techniques required to operate a 60,000-ton "floating airfield" and some one hundred modern aircraft.



POLARIS *test vehicle was fired for first time from a surface ship, USS Observation Island, August 27. Objects around missile are launching shoes used to separate vehicle from tube. All test objectives were met.*

Announcement by Bendix

Plans Set for Eagle Missile System

The *Eagle* missile system, aimed at achieving a new look in the Navy's long-range defense of a task force against enemy air attack, will be developed by an industry group named by the Bendix Aviation Corporation.

According to Dr. R. D. O'Neal, general manager of the Bendix Systems Division, "*Eagle* represents a completely new generation of air-to-air missiles. It will be fired from an aircraft at long ranges against enemy aircraft and aerodynamic guided missiles. The *Eagle* will be designed both for maximum efficiency and lowest cost."

The Bendix Systems Division holds the prime contract for the *Eagle* missile system, and the following companies will participate in the project:

Grumman Aircraft Engineering Corporation, the major subcontractor, will be responsible for the airframe and propulsion system and will develop the missile's launching system and some ground handling equipment.

Sanders Associates, Inc., Nashua, N. H., is to design the "seeker," a part of the missile that will provide data needed to "home" on a target.

Litton Industries, Beverly Hills, Calif., will be responsible for the development of a tactical computer to maintain the maximum effectiveness of the system. The development of this electronic "brain" will be handled by Litton's Electronics Equipment Division.

The Air Arm Division of the Westinghouse Corporation, Baltimore, Md., will supply an airborne intercept radar for detecting and tracking targets. It supplies data to the computer.

Two other Bendix Divisions are also at work on the *Eagle* project: the Research Laboratories Division, Detroit, which will develop electronic guidance equipment; and the Bendix Pacific Division, North Hollywood, Calif., which will design and produce subsystems and perform missile assembly and tests for the U.S. Navy.

THE GIANT BUG KILLER, *designed by O&R workmen at MCAS Cherry Point for the Bureau of Aeronautics is dubbed the "HIDAL" (Helicopter Insecticide Dispersal Apparatus Liquid). The HRS is armed with two 55-gallon tanks of insecticide and two spraying booms. The copter, capable of wiping out the mosquitoes in a large area, will be evaluated at Patuxent River. Once approved, it will be used in swamp areas near Navy and Marine installations.*

TRI-PURPOSE COPTER RIG

CHANCE Vought Aircraft has designed kits to make its emergency helicopter a triple-purpose vehicle, capable of fire-fighting, air-sea rescue, and general utility work.

Experience gained in equipping the company's Sikorsky S-58 for rescue operations is being made available to the military services and commercial helicopter operators through an illustrated book, "Helicopter Rescue Equipment."

Months of study and experimentation by Vought helicopter pilot Ted Shireman and company personnel led to the new helicopter rigs.

CREWMAN AND PILOT GET RESCUE PRACTICE

They found that equipping a helicopter for rescue and emergency operations was not a simple task. The many items required did not come in one handy package and considerable "shopping around" in many sections of the country was involved in developing the rescue kit.

Much of the equipment stowed in the helicopter at all times—the fire-fighting, medical and rescue items — was provided by company fire and medical departments.

Total weight of the equipment is 678 pounds. When not in use, rescue equipment and fire-fighting gear are stowed under the helicopter's seats. Litters used for evacuation are stowed on top of the seats. Medical equipment and other fire-fighting materials are stowed forward in the passenger compartment.

Included in this group are sash cords, signs, rubber boots, aluminized protective suits; a life raft, surgical supplies, first aid kit, blankets, pillow and sheets; flare pistol and cartridges, smoke markers, spare oxygen bottle, hand lamps, life vests, power unit, dry chemical extinguishers, and wire rope cargo cables.

FIRE FIGHTING EQUIPMENT IS DELIVERED

Vought's 11-passenger helicopter is the only S-58 model currently operating as a commercial rescue vehicle. In addition to the pilot and co-pilot/crewman, the helicopter carries on all emergency flights, two firemen wearing aluminized suits and a company nurse.

The equipment breakdown in the booklet is expected by Chance Vought to be particularly interesting to the Coast Guard, which is taking delivery of HUS-1G's (S-58's) to operate out of New Orleans and St. Petersburg.

The compilation of sources, cost and weight of the various items is expected to eliminate a laborious search by personnel of units who make extensive use of helicopters in off-shore transportation and other operations engaged in remote area projects where the proper rescue equipment may save a life at any time.

Special removable racks and storage cabinets developed by Shireman and company field engineers make it possible to remove and replace them with conventional seats for passenger operations in only a few minutes. Without this feature, stowage or removal of rescue equipment would be a time consuming and costly operation, requiring major cabin modifications. In the rescue configuration, the copter retains seating space for seven.

Greatest drawback to the Chance Vought three-purpose helicopter, says a recognized Navy air/sea rescue expert, is the size of vehicle which is required. Only Marine squadrons and Navy ASW squadrons have helicopters this big. NAS-based Search and Rescue helicopters are the smaller HUP's.

Metallic Film Resists Heat

Used on Missiles and on Aircraft

Keep a weather eye on that jet machine of yours when you park it—there may be gold in them thar engine shrouds or tail cones! The use of the precious metal as a reflector of infra-red radiation has been announced by Engelhard Industries, Inc., after a year and a half of testing.

Liquid gold solutions are sprayed or "painted" on vulnerable surfaces and, after baking, a metallic film four-millionths of an inch thick is left. The abrasion resistant film is said to be a highly efficient reflector of infra-red radiation and reduces the rate of heat transfer on engine shrouds, drag-chute containers, tail cone assemblies and blast shields. The metallic film allows the use of light structural components, and the weight of the film itself is negligible.

Depending upon the particular vehicle involved, the precious metal solutions are applied to porcelain-enamel stainless steel, fiberglass laminates and other heat-resistant material.

Some planes and missiles protected by the gold solutions are the F-100, F-101, *Redstone, Jupiter, Polaris.*

Navy Contract for New HUL

Development Contract Given Bell

Navy has contracted with Bell Helicopter Corporation for the building and testing of a turbine-powered light utility helicopter. The helicopter is to be an advanced version of the HUL-1 which is used for reconnaissance, patrol, rescue and general utility work.

The new model will be powered by the new Allison YT63-A-3 turboshaft engine of 250 horsepower. Bell executives predict it will fly faster, climb faster, carry a greater payload and have a higher hovering ceiling.

The ceiling is estimated in excess of 15,000 feet; maximum rate of climb, at more than 1300 feet per minute; maximum speed, at more than 110 mph; vertical rate of climb, at more than 1000 feet per minute, and range, at more than 200 miles. A payload of 1000 pounds in addition to 170-pound pilot (for 200 miles) is predicted.

Feature of the new Allison turbine engine is its light weight, 328 pounds less than the HUL-1's piston engine.

The contract calls for the building and testing of two new HUL's.

Battle E's for AirLant

From Maine to the Mediterranean

The nine winners of the Type Commander Battle Readiness Excellence Pennant for the fiscal year 1959 were announced by Capt. M. M. Hanley, Force Training Officer for Commander, Naval Air Force, Atlantic Fleet. Recipients of this high accolade are:

VF-33, commanded by Cdr. C. R. Sawyer, flying F11F *Tigers* based at Oceana, Va., and presently with CVG-6 aboard the USS *Intrepid*.

VF-14, commanded by Cdr. C. Baumeister, flying F3F *Demons* based at Cecil Field, Fla., and presently with CVG-1 aboard the USS *Franklin D. Roosevelt*.

VA-36, commanded by Cdr. A. L. Detweiler, flying A4D *Skyhawks*; VA-35, commanded by Cdr. H. W. Foote, flying AD5 *Skyraiders;* and VAH-9, commanded by Cdr. F. L. Harris, flying A3D *Skywarriors*, all based at Cecil Field and presently with CVG-3 aboard the USS *Saratoga*.

VS-27, commanded by Cdr. N. D. Champlin, flying S2F *Trackers* based at Norfolk, Va.

Helicopter Squadron 7, commanded by Cdr. C. R. Johnson, flying HSS-1's, also based at Norfolk and now on the USS *Valley Forge*.

VP-10, commanded by Cdr. W. T. Rapp, flying P2V *Neptunes* based at Brunswick, Me.

VP-44, commanded by Cdr. L. W. Frowley, flying P5M *Marlins* based at Norfolk, Va.

Combat readiness of all Naval squadrons is the principal index of the strength-in-being of the operating forces. Two major factors influence the choice of Battle Readiness Excellence Pennant winners: the state of training of the assigned personnel and the availability of properly trained replacements to meet the needs of attrition and accelerated operations.

Middies Trained at Corpus

1200 Indoctrinated in 2 Segments

More than 1200 NROTC Midshipmen from 52 colleges and universities received summer training at NAS CORPUS CHRISTI this year.

The first regiment of 605 midshipmen from 26 schools west of the Mississippi arrived on July 6th. After air indoctrination they were sent to Coronado for amphibious and surface training.

When the first group departed, the second regiment of 601 midshipmen from eastern schools was airlifted to Corpus from Little Creek where they had received amphibious training.

The three-week aviation indoctrination cruise at Corpus is designed to provide a basic and inclusive picture of aviation to the midshipmen. It is divided into three phases of training.

Midshipmen are divided into three battalions so that each group is in a different phase at a given time. Phases include seaplane training, single engine training, and academic training.

A squadron of 12 seaplanes, VP-45 from NAS BERMUDA, uses 300 officers and men for midshipmen training. Each midshipman has an opportunity to take a three-hour flight in a P5M *Marlin*.

In the single engine phase, midshipmen learn how advanced student pilots complete their flight training. Each gets a chance to fly in a jet.

The academic or ground school training phase includes lectures on aerodynamics, flight engineering, navigation, flight physiology, career appraisal and other subject studied by advanced flight students.

The indoctrination tour includes military drill and a complete athletic program, with keen competition offered in softball, volleyball, golf, swimming, and pistol shooting.

Commanding the NROTC aviation detachment at Corpus this year was Capt. Edwin S. Lee, Jr., from the NROTC unit at Purdue University.

MIDSHIPMAN DANIELS IN EJECTION SEAT

First NavCad Flies Tiger

Syllabus Covers Gunnery, Tactics

Naval Aviation Cadet Preston H. Lineberger became the first NavCad to receive flight training in the F11F-1 *Tiger* with Advanced Training Unit 222. He was one of three students at NAAS CHASE FIELD to report to Kingsville for advanced training.

All previous students to train in the F11F had been officers.

With the unit established permanently, it will be responsible for completing the training of all ATU-202 graduates. Beginning soon, ATU-222 will train students from all jet units at NAAS Kingsville and Chase Field.

VF-84 Fathers Six Children

Good Will Spread Throughout Med

Fighter Squadron 84 has wholeheartedly supported President Eisenhower's project for public relations abroad. The squadron's version is the "People-to-Little-People-Program."

Early in 1958, VF-84 decided to sponsor six children. With the aid of Save the Children Federation, the men selected a boy and a girl from France, Greece, and Italy, countries they expected to visit during their 1958-59 deployment aboard USS *Randolph*.

GREEK CHILDREN ENTERTAINED BY NAVY

Plans went according to schedule, except that the ship did not put into a French port, and Gerard Vallet and Maryvonne Charpentier could not be entertained. The squadron made up for it in Greece. Little Panayiota Lagou was invited aboard the carrier for lunch and a tour. The boy, Elias Hadjuyiannakis, was in the hospital. Members of the *Crusader Two* outfit paid a call, bearing many gifts.

When the *Randolph* arrived in Italy, Angelo Porro and Giovanna Varriale were also extended the hospitality of Commander R. T. Hoppe's outfit.

LETTERS

SIRS:

Provided you can obtain the concurrence of the officer concerned, you have my permission to print the following:

Captain F. E. Bardwell, USN
Op 53, Navy Department
Washington 25, D. C.

Dear Punk:

Now look here, Bub, you young fellows better be sure of your statements before getting idle rumors printed about who did what and when. It is things like this that cause international incidents, inter service rivalry and an erratic stock market, not to mention the unseasonable weather we have been experiencing recently.

For your information, a Lt. Brandley, USN, assisted by one "Doc" Prunier, CAP, USN, took off from Wichita on 26 October 1940, in JRB-1 BUNO 2543 for Indianapolis. This was the first leg of a delivery trip to Anacostia which was successfully completed on 27 October 1940 without undue incident (only one bounce!).

I am not claiming that BUNO 2543 was the Navy's original JRB/SNB. I am claiming, with the prospects of having several uncomplimentary remarks sent in my direction, that BUNO 4711 was not.

I am not sure which Beechcraft was first delivered to the Navy. As I recall, about the same time that I picked up number 2543, "Moon" Mullins, or someone from his Radio Test Division at Anacostia also picked up a plane at Wichita. These two were among the first.

Sorry that it has to be this way. I have *my* log books.

Best regards,
F. A. BRANDLEY
RADM (Ex-Lieut.), USN
COMCARDIV 15

P.S. According to the Log I flew JRB-2 4711 on 27 June 1941 with a Lt. Griffin.

SIRS:

With pious salaam to the West, I yield to the ancient and venerable one.

F. E. BARDWELL

SIRS:

If serial numbers are a good indication of the relative ages of aircraft, then Capt. Bardwell will have to relinquish his claim that 4711 is the Navy's original JRB/SNB.

My log indicates that commencing 16 May 1941 I flew JRB-1's 2544, 2545, 2546 and 2547 in VJ-3 at Maui. These aircraft were specially adapted for drone control work. The canopy over the pilots' heads was raised and the rear part of the canopy was plexiglass. The purpose of the special canopy was to permit the control pilot to look back over the tail of the control plane in order to control the drone which was about one mile astern. I don't know how long VF-3 had these planes, but I believe they received them in 1940.

I do not claim that 2544 was the first JRB/SNB, but it might have been the first production model.

W. E. FLESHMAN, CDR.
NATTC Jax

¶ For the benefit of very young Naval Aviators who may be confused by the foregoing, a *Beechcraft* (SNB/JRB) is a twin engine, landbased aircraft. It weighs 8725 pounds fully loaded, cruises at 140K indicated, has a sometime endurance of 4+30 (without nosetank) and is affectionately referred to by a generation of determined pilots as "Sweet Nellie Brown," "Slow Navy Bomber," "Sneeb," or just plain "Bug Smasher."

SIRS:

All officers and men who served aboard the USS *Hornet* (CV-8 and CV-12) are invited to attend the 12th annual reunion to be held in New York City June 24-26, 1960. To get your name on the mailing list, write John F. Murphy, 1657 Hannington Avenue, Wantagh, L.I., New York.

USS HORNET CLUB

SIRS:

I believe your article titled "Kool, Man, Kool, Daddy-O" in the August issue is in gross error.

The name used by light attack pilots for the maneuver described is "idiot loop" not "goofy loopers."

LT. J. J. HALE
Attack Squadron 25

TEST PILOT REUNION

The annual Reunion Party of the Test Pilot School graduates will be held at the Patuxent River Officer's Club on 10 October at 1830. All Test Pilot School graduates desiring to attend may make their reservations by writing the Director, Test Pilot School, NAS PATUXENT RIVER, Md.

ANOTHER FIRST? *William J. Hicks, Jr., SO3, (R.) was reenlisted on his twentieth birthday by Cdr. Alvin F. Emig, C.O. of HS-8. The oath was administered in flight as an HS helicopter flew from decks of the Hornet in the Far East.*

SIRS:

As too often happens a fleet unit or ship comes upon a better method of doing something, then proceeds to keep it a big dark secret. I refer to the cyclic Concept of CARQUALS by the USS Randolph, p. 17 of your August issue.

In 1953 the USS *Kearsarge* under Capt. (now Admiral) T. B. Clark used this method (cyclic) to qualify Carrier Air Group 11. The only difference between the two operations was that we used #2 elevator—the USS *Kearsarge* was a straight deck carrier at the time.

LCDR. W. J. MC CAW
NAS Grosse Ile
Former Flight Deck Officer

SIRS:

If you can top your August issue, I'd like to see it. Great stuff.

JOHN T. NOLAN, JR.
Cincinnati, Ohio

SIRS:

The article titled "F8U-2 Simulator Unveiled" in June on p. 34 was read with great interest by personnel of U.S. Naval Training Device Center, Port Washington, N. Y. The description of the capabilities of the F8U-2 Aircraft Weapon System Trainer was expertly and accurately written.

In the interest, however, of keeping the record correct, the following comments are offered:

a. The F8U-2 WST consists of two trailers. One, the F8U-2 WST (Flight) contains the cockpit, the Flight Instructor's Station, and the flight computing and simulation equipment. This unit, manufactured by Link Aviation, Inc., is capable of operating independently and, when in this independent mode of operation, provides complete flight training to the pilot.

b. The second unit, the F8U-2 WST (Tactics), was manufactured by the Goodyear Aircraft Corporation and contains the Tactics Instructor's Station, an Air Controller's Station, and the tactics computing equipment. This trailer provides realistic radar and armament, including *Sidewinder*, simulation to the pilot in the other trailer. The Goodyear Aircraft Corporation had the responsibility of tying the two trailers together at NAS MOFFETT FIELD and NAS CECIL FIELD respectively.

T. R. BRABY

JAG AAR ISSUE

All Naval Aviation personnel should set their sights for the September 1959 issue of JAG Journal. It's devoted to the ins and outs of aircraft accident investigations. As usual, the best authorities author the articles. RAdm. W. O. Burch, Jr., Commander of the Safety Center, has a by-line, and the old pro, Grampaw Pettibone, is prominently cited in Lieutenant Sedgwick A. Ward's feature on p. 15.

SQUADRON INSIGNIA

Centurions all, VF-141 pilots made the mark on the Ranger in WestPac. Above, a squadron F4D Skyray adds to the score. Below, Capt. Noel Gayler, ship C.O., holds sign with Cdr. Bill Donnelly, 141 skipper, on his right.


NAVAL AVIATION NEWS
NOVEMBER 1951
AUGUST 1954
JULY 1949
MARCH 1956
NOVEMBER 1956
NOVEMBER 1957
JULY 1950
RESTRICTED
APRIL 1957
MAY 1953
APRIL 1952
JANUARY 1955
OCTOBER 1948
FEBRUARY 1959
FEBRUARY 1950
RESTRICTED